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INITIAL TREATMENT OF BURNS IN MASS CASUALTIES

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A few patients with extensive burns can completely engage the personnel and much of the working space of the emergency room of a hospital. A large number of patients have to be handled in a different manner if they are to receive any reasonable emergency treatment. Sufficient space to handle many casualties within minutes or hours is an absolute requirement for any hospital. Under disaster conditions, practically all burned patients should receive prophylactic antibiotics. Where time is important, supportive therapy for extensive burns must be emphasized and a predetermined standardized procedure employed.

THE management of mass burn casualties has acquired new importance with increased industrial hazards and the potential use of atomic weapons. Hospitals and emergency wards are generally unprepared to meet these overwhelming situations. We found that a few patients with extensive burns completely engaged the personnel and much of the working space in a well-equipped emergency room in a 500-bed hospital. In one instance, two patients with extensive burns, treated at the same time, tied up all emergency room personnel and four additional persons from other divisions for a period of two hours. It is obvious that a large number of patients would have to be handled in a different manner if they were to receive any reasonable emergency treatment. In a major disaster, the patients with very severe burns and minor burns would be eliminated by careful sorting to give the largest number of persons with severe but treatable burns a chance for initial care and survival.

The philosophy in dealing with mass burn casualties is not different from that in handling mass war injuries. The objective is to give primacy in treatment to those individuals most likely to survive their trauma. It is evident from our experience and from the experience of those institutions which have been confronted with burn disasters that a large number of burned persons could never be crowded into the average hospital emergency room. It is further evident that hospitals, for the most part, would be inadequately implemented with equipment and supplies for treatment of large numbers of patients.

Although St. Luke's Hospital has never been faced with a burn disaster, we recognize the importance of a well-formulated program should such an event occur. The plan we suggest emphasizes organization of hospital personnel, stockpiling of

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supplies and equipment, allocation of space for care of mass casualties, sorting of patients, and rapid methods for initial burn treatment.

Preliminary Planning and Sorting of Patients

Available man power includes doctors, nurses, orderlies, administrative personnel, maintenance personnel, and aids and other nontechnical groups. Emergency auxiliary help will be assigned by Civil Defense or other disaster organizations. A proposed chart of organization is shown (fig. 1).

Advance preparation should be made not only in storing emergency equipment and supplies in excess of normal operating requirements but also in having them where they are most readily available. Emergency reserves of medicaments and dressings must be provided and maintained. A number of wheeled carts is essential. Some of these, such as the burn cart (fig. 2*A*) are kept loaded with dressings and other materials for initial treatment. These carts greatly expedite the distribution and availability of dressing materials. We estimate that one cart, fully loaded, could take care of 20 extensive burns. A large supply of stretchers should also be stored.

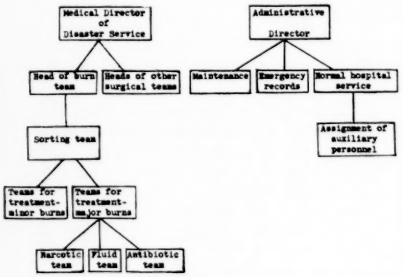

Fig. 1.—Chart showing proposed organization of personnel during emergencies.

Space sufficient to handle many casualties within minutes or hours is an absolute requirement. Any open areas near the emergency room or on the hospital grounds can be used for assembling and sorting large numbers of casualties. Tents also easily and practicably increase the amount of sheltered work space (fig. 2*B*). Sliding partitions in emergency surgeries (fig. 2*C*) provide another method for hastening communication and increasing capacity. Hospital corridors (fig. 2*D*) may be utilized during emergency treatment and for assembling the patients. Other space can be utilized, if required, such as recreation rooms and class rooms and business offices, depending on the hospital.

Sorting of patients should be done under the supervision and direction of the most experienced surgeons available. One suggested method is to divide the burned patients into three classes or groups, labeling and identifying each with a quickly recognizable colored tag. All tags should have adequate space for recording identification, medication, blood type, and disposition orders. Patients with 0 to 20% burns should be assigned to groups 1 and identified by a green tag. Such patients can be sent home or to some neighboring secondary treatment center for dressing and treatment. Narcotics may be given sparingly when necessary. Patients with 20 to 80% burns should be assigned to group 2 and identified with a red tag. This group should include not only patients with burns covering 20 to 80% of skin surface but those with burns of lesser extent with complicating injuries (fig. 2*E*) such as major fractures, head injuries, or thoracoabdominal injuries. Patients with 80 to 100% burns should be assigned to group 3 and identified with a white tag. Burns of 80% or more, in most instances, are fatal. Victims of such burns should be moved to sheltered areas in the hospital, kept warm, made comfortable, and given what supportive treatment the circumstances allow.

Treatment

The patients in group 2 are most likely to be savable and, therefore, efforts will be concentrated on this group. In dealing with mass casualties, where time is important, supportive therapy for extensive burns must be emphasized and a predetermined standardized procedure employed.

Fluid Replacement.—In estimating the fluid replacement for the first 24 hours, various standard formulas may be used. Whatever formula is selected, it is essential that adequate amounts of blood, blood substitutes, and crystalloid solutions must be given. Where required, the blood and the crystalloid solutions should be given simultaneously in separate veins. The urine output must be closely followed and the hematocrit reading followed if possible. Care must be taken not to overtreat adults with burns in excess of 50% nor to overtreat small children.

Patients with severe burns should have an indwelling catheter on constant drainage. In adults, during the first 24 hours, desirable urine output is 30 to 50 cc. per hour. Less than 15 cc. indicates the need of fluids, while 75 or more shows that too much is being given. Small children would have a proportionate decrease in hourly urine output.

Fluids should be given orally with caution during the first 24 hours. Subsequently, if the patient is not vomiting, such fluids play an important part in replacement therapy. Except in unusual circumstances, no more than eight liters of fluid should be administered in 24 hours. In patients with lesser burns, fluids given orally and preferably chilled are desirable. A level teaspoonful of table salt and one-half level teaspoonful of sodium bicarbonate per

Fig. 2.—*A*, special burn carts loaded with dressing materials and equipment stored in central supply area; *B*, tents for increasing sheltered work space on hospital grounds; *C*, surgeries shown with sliding partitions open to increase capacity and hasten communications; *D*, corridors used during emergency treatment; *E*, burns complicated by other injuries requiring simultaneous treatment by other teams; *F*, patient in shock position with gauze freshly dipped in petrolatum being applied; and *G*, upright poles and rope, covered with sheet, as substitute for cradle.

liter of water is a satisfactory mixture. Sodium chloride in dextrose, sodium lactate, Ringer's solution, or Ringer's lactate solution may be used.

Closed Method of Treatment.—When immediate treatment is given by closed methods, a simple technique will expedite coverage of the burn. Large surfaces may be covered quickly with gauze freshly dipped in petrolatum (fig. 2*F*) before the occlusive dressing is applied. If the patient is not in shock and can stand, even more time is saved. Adherent foreign materials are removed, but vesicles are not opened. The dipping mixture, which is stored in drums or gallon cans at room temperature, is a combination of 30% amber petrolatum and 70% liquid petrolatum. The latter ingredient should be medium heavy. The stainless steel dipping pan is 4 in. deep and 14 in. square. In the center, 1 in. from the bottom, is a steel rod 1 in. in diameter which runs the length of the pan.

Rolls of fine mesh gauze 1 yd. wide are cut in 9-in. lengths and kept sterile. These rolls are saturated in the mixture by unrolling them beneath the steel rod and passing the gauze back and forth until it is soaked. Then strips of suitable length are cut to cover large surfaces. These strips are always applied vertically to the long axis of the body or extremity. A single prefabricated dressing 18 in. square and 1 in. thick will cover a large part of the front or back. Two can be rolled to cover an extremity. These are held by wrapping uniformly with Ace bandages, rolled gauze, or rolled crepe paper. Prefabricated dressings are made up of fine mesh gauze on one side and a paper cover on the other. The padding may be cotton, sheet wadding, Cellucotton, or mechanics waste. The sterile dressings are wrapped individually and stored. If this method is not practicable, gauze previously prepared with petroleum jelly or bismuth tribromphenate (Xeroform) or plain fine mesh gauze, dry, may be substituted. If necessary, the prefabricated dressing can be applied directly to the burned surface.

Open Method of Treatment.—The open air or exposure method is applicable when warmth and shelter are available, when transportation is not required, where burns are in suitable regions of the body, and where there are overwhelming numbers of burns. Often cradles are not available. In this emergency, upright poles can be fastened to the bed and a rope strung between them (fig. 2*G*). A sheet can be draped over the rope like a tent.

Adjuncts to Treatment.—Morphine is administered sparingly to patients in shock and should be given slowly intravenously. Judicious use of barbiturates will help allay apprehension and decrease the amount of narcotic required. In time of disaster, a tetanus toxoid booster dose or tetanus antitoxin should be given to all burned patients. Patients should be tested for serum sensitivity before administration of antitoxin.

Under disaster conditions, practically all burned patients should receive prophylactic antibiotics. Penicillin is preferred for parenteral use. Other broad-spectrum antibiotics may be used orally. It is imperative that patients to be transported receive prophylactic antibiotics. Patients treated in general hospitals need no antibiotic during the first 24 hours, but the use of antibiotics should be started during the second 24 hours on all who have indwelling catheters. This period gives time to eliminate patients with histories of allergy to antibiotics. The use of corticotropin (ACTH) and cortisone should be avoided except under controlled conditions.

Regardless of the method of treatment of the burned area, tracheotomy should be performed when required in extensive face or neck burns. It is also advised at earliest indication where fire has been inhaled with resultant pulmonary burns.

Ionizing Radiation.—While exposure to ionizing radiation should be recognized and recorded, patients so exposed do not ordinarily require immediate treatment. Those patients within the zone receiving 600 r or more will probably die and should be assigned to group 3, which is the category of fatal burns. Persons receiving 400 r to 600 r are assigned to group 2 where they will be treated. About half will be savable. These patients require antibiotics and, in certain instances, supportive therapy. The casualties receiving less than 400 r are handled as group 1 patients in the burn grouping. They are sent to secondary centers for observation. In burns due to irradiation, skin changes will appear late.

Disposition.—It should be noted that persons with burns complicated by other injuries may be under simultaneous treatment by other teams. In the case of a large disaster, the receiving hospital may not be able to keep all of the casualties. In that event, transportable burned patients who have been given initial care are evacuated to other centers.

Summary

A method of management of mass burn casualties is needed for efficient and rapid disposition of patients by a minimum of personnel. Planning for organization, space utilization, sorting, immediate treatment, and preparation for definitive care is important. It is hoped that these suggestions will serve as a stimulus toward a tentative plan or organization which may easily be modified to meet the requirements of each local situation.

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DERMATOLOGICAL RADIATION THERAPY IN THIS NUCLEAR AGE—AN APPRAISAL

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The need for radiation therapy in dermatology has been greatly reduced by recent developments in pharmacology and endocrinology. Striking successes with the use of antibiotics and steroids have led to the abandonment of radiotherapy in many diseases. In others, its use has been rendered more precise by new advancements in radiology. Irradiation of the skin can be more closely confined to the disease process by choosing the proper half-value layer from the zone of soft roentgen rays, by the use of beta-emitting radioactive isotopes, and by shielding. Dermatological radiation therapy is localized, the doses are minimal, and the exposure is fractionated. Accurate diagnosis is essential in order to avoid unnecessary irradiation, and is made possible by a thorough training in dermatology; accurate therapy is equally essential and is made possible by a thorough training in radiology and biophysics. Ionizing radiations are not the dermatologist's only form of treatment or his most important one, but he is bound to use them when such use is imperative for the good of the patient.

The nuclear age is upon us. Atom splitting threatens to become as common in our time as rail splitting was in Lincoln's day. Recently, physicists and radiation health officers have been sounding alarms regarding the perils to mankind of a slowly increasing burden of radiation exposure. These warnings, chiefly of theoretical dangers to the evolutionary future of the human race, have been broadcast in the lay press. Unfortunately, the public is now beginning to mistrust radiation exposure to the point where many patients are refusing necessary diagnostic procedures and radiation treatments. Even in the medical journals, statements have been made [1] implying that the nonradiologist may be adding unjustifiably to man's mounting lifetime exposure by careless or unwarranted use of therapeutic or diagnostic radiation. The seeds of doubt and mistrust have thus been planted in the minds of many physicians.

It is time to separate facts from fancies among these fears. Just like the scalpel, radiation is a valuable medical tool, and it is also a highly dangerous one. In using it, are we in the medical profession really going toward our goal of helping humanity, or away from it? Today it behooves every medical user of ionizing radiation to conduct a thoughtful survey of his own use of the modality with this idea in mind.

The purpose of this paper is to review and evaluate the role of radiation therapy of the skin in this nuclear age, and, insofar as is possible, to answer the insistent question: "Is dermatological radiation therapy adding unnecessarily to man's increasing radiation burden?"

Dwindling Indications

Today, the dermatologist is using radiation therapy less and less frequently as newer, more effective methods are replacing it in the treatment of many skin diseases. Some diseases which were treated routinely by radiation as recently as three years ago are now more effectively treated by means of drugs or other modalities. In some of these ailments, roentgenotherapy is no longer indicated at all. In others, it is reserved for the most resistant cases.

Pyogenic Infections.—Antibiotics have entirely eliminated the necessity for roentgenotherapy in erysipelas, sycosis barbae, and lymphangitis. It is used less often than formerly for furuncles, carbuncles, and abscesses. Granuloma pyogenicum is now almost always treated by electrodesiccation and curettage.

Vulvar and Anal Pruritus.—Topical steroid therapy has brought dramatic relief to sufferers from pruritus vulvae or pruritus ani. I have found that simple cleansing with hexachlorophene (pHisoHex) is highly effective and many times the only form of treatment necessary after the vicious circle of itching and scratching has been interrupted by topical therapy with steroids.

Atopic Dermatitis and Localized Neurodermatitis.—Atopic dermatitis and localized neurodermatitis can usually be brought under control by means of topical steroid therapy and the new tranquilizing drugs, used in conjunction with other accepted forms of dermatological therapy.

Generalized Neurodermatitis and Autoeczematization.—Patients with generalized neurodermatitis and autoeczematization are now treated with steroids given orally or parenterally, precluding the use of total body irradiation.

Plantar Warts.—Many dermatologists have given up treating plantar warts with x-rays. They have found that a much greater percentage of cures can be obtained by using topical applications of monochloroacetic acid and salicylic acid plaster or by performing surgical curettage, two methods which are not at all dangerous in comparison with roentgenotherapy.

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Read before the section on military dermatology at the 15th annual meeting of the American Academy of Dermatology and Syphilology, Chicago, Dec. 12, 1956.

Monilial Infections.—Nystatin has proved to be of much greater value than roentgen rays in the treatment of monilial infections of either glabrous skin or nails.

Granuloma Annulare.—The intradermal injection of hydrocortisone into lesions of granuloma annulare is fully as effective as irradiation and has virtually eliminated the latter in treatment.

Dermatitis Herpetiformis and Lichen Planus.—The sulfones for dermatitis herpetiformis and chloroquine or bismuth sodium triglycollamate (Bistrimate) for lichen planus have greatly reduced the need for x-ray treatment of these diseases. Cases of exfoliative dermatitis are seldom treated with total body irradiation. Steroids given orally or parenterally are more effective.

Granulomatous Diseases.—Certain granulomatous diseases are now treated with drugs instead of roentgen rays. Lupus vulgaris and tuberculosis verrucosa cutis respond to treatment with isoniazid and streptomycin; blastomycosis is treated with stilbamidine.

These examples show how the indications for irradiation in the therapy of skin diseases are dwindling. Furthermore, no new indications have been established during the past few years. The dermatologist is limiting his use of ionizing radiations to conditions which are resistant to other forms of treatment. This is a definite trend.

Softer Radiations

Another important trend in dermatological therapy is toward the use of softer radiations. Their use is aimed at confining irradiation to the disease process by limiting the depth dose. Although absolute and specific regulation of the depth dose of x-rays is impossible, several means exist whereby it can be controlled to a large extent.

Grenz Rays.—Over 75% of grenz radiation is absorbed in the first millimeter of tissue. Grenz rays are particularly suitable when ionizing radiations are to be used for diseases of the eyelid, scrotum, and female genitals where underlying structures are radiosensitive and must be protected. They can be used on the scalp, axillas, and eyebrows for treatment of superficial dermatoses without incurring danger of epilation, providing accepted dosage rules are followed. The use of grenz rays should be restricted to the most superficial disease processes. A knowledge of the depth of the pathological condition is essential.

The greatest danger with grenz rays is that the operator may be lulled into a false sense of security, thinking that because they are soft they are entirely safe and can be used almost indiscriminately on recurrent or chronic dermatoses. Grenz rays are ionizing radiations, just like x-rays or gamma rays. They can and do produce radiation sequelae when used in excessive doses. Accidental overdosage can easily occur if the machine has not been accurately calibrated or if the operator uses a combination-type machine producing either grenz rays or conventional superficial x-rays.

There are still other pitfalls. Small errors in target-skin distance or timing can cause appreciable alteration in dosage. Also, the dose will be increased by approximately 50% if an unnoticed surge on the power line boosts the voltage of a grenz machine from 10 to 12 volts.

Leading authorities [2] who have made accurate comparison consider that conventional superficial x-rays in doses of 85 r are more effective and give longer lasting benefit in the treatment of benign dermatoses than grenz rays in doses of 200 r.

Contact Roentgenotherapy.—Contact roentgenotherapy provides another means of limiting irradiation to the disease process. It is gaining in popularity among dermatologists for the treatment of small cutaneous carcinomas. The contact tube is designed to administer a cancericidal skin dose at very close range, incurring a minimal depth dose.

Intermediate Zone of Soft Radiations.—A third means of limiting the depth dose to the disease process concerns an almost unexplored field. It is what I call the "intermediate" zone of soft x-rays, with wavelengths between those of grenz rays and conventional superficial x-rays. The half-value layers range from 0.02 to 0.2 mm. of aluminum. Some of the newer superficial therapy machines include this range of radiation, furnished by beryllium window tubes. By using various filters, it is possible to obtain a wide range of radiation qualities. This enables the therapist to adjust the degree of penetration to the depth of the process to be treated. The physical attributes of these intermediate soft radiations are known, but the therapeutic indications and the required dosages have not yet been established. I predict that they will be established and that this range of radiations will be used more and more by dermatologists in the future.

Radioactive Isotopes in Dermatology

In the future, radioactive isotopes will no doubt be used instead of radium and radon wherever the former will give equal or better results with less danger to operator and patient. The purpose of their use in dermatological therapy will be not only to limit the depth dose but also to attain greater specificity in irradiation than is possible with other radiative means. Radium and radon are still widely used, but the fact that one is a powdered salt and the other a gas is disadvantageous, and an isotope can usually be found which will irradiate a given lesion more effectively and accurately than would be possible with radium or radon. Many operators have turned to such promising isotopes as cobalt-60 [3] and gold-198,[4] which, in addition to their excellent therapeutic value, are metals and much safer to handle. Tantalum-182 [36] has also been used successfully in gamma ray therapy of the skin.

Beta ray therapy in dermatology is coming back into its own, since pure beta-emitting substances are readily obtainable from the atomic pile. Phosphorus-32 [5] in flexible plastic sheeting has given good results in the treatment of widespread superficial lesions over awkward body contours. Elastoplast or cloth, impregnated with P^{32}, is also being used with good results.[6] Strontium-90 plaques [3] are commercially available and

can safely be used on the eyelid without danger to the lens. Ruthenium-106 [7] can be electroplated onto molds of any shape for surface application. All of these are particularly suitable to dermatological use.

Evaluation

It is evident from the foregoing survey that the dermatologist of today is "roentgen conscious" and bent on using radiation sparingly, as he would any powerful medicine. We all realize that ionizing radiations are destructive rather than stimulating. However, they are still the most effective agents for the treatment of certain diseases, including some which are benign but nonetheless disabling.

As dermatologists, we are acutely aware of the physical and mental torture which can be caused by skin diseases. As doctors we are dedicated to the relief of suffering. Furthermore, we are taught, "do no harm." Are we, as dermatologists, doing unnecessary harm when we use ionizing radiations? That is the crux of the matter. To answer this question it is necessary to consider carefully how the dermatologist uses radiation therapy.

First, he uses localized radiation therapy. Localized body exposure has only the fractional significance of total body exposure. Even for workers who are exposed daily, the permissible dose to the extremities is five times as great as the permissible total body dose. Localized irradiation, even with large doses, produces no serious systemic effect, as can be confirmed by the fact that many thousands of people who have been so treated for skin cancer have remained healthy. In giving localized therapy, the untreated areas are covered with lead shields, or cones are used. In treating acne of the face, for example, the thyroid, scalp, eyes, and lips are shielded.

Braestrup,[8] consultant to the Atomic Energy Commission on radiation protection, recommends that "In order to reduce genetic effects, unnecessary irradiation of the gonads of patients who have not passed the reproductive age should be avoided. Whenever possible, the gonads should be shielded during irradiation of any part of the body. When shielding is not feasible, the dose to the gonads, and especially to the ovaries, may be reduced significantly by the use of x-rays of low penetration. This modification will permit irradiation of skin areas near the gonads."

Second, the dermatologist uses superficial radiations with half-value layers ranging from 0.02 to 3.5 mm. of aluminum. For treatment of benign dermatoses, the half-value layer is usually less than 1 mm. of aluminum. Radiations of this quality applied to the skin are insufficient to damage the liver, spleen, bone marrow, or reproductive organs. Filtration is kept to the minimum which will insure an adequate dose to the disease process.

Third, dermatological radiation doses are small, comparatively speaking, and are usually fractionated. Single doses are 75 to 85 r, seldom over 150 r, for benign diseases. They are given at intervals of one to two weeks. As soon as the disease begins to respond, treatments are either discontinued or spaced further apart, because it is known that the effect of ionization will continue for some time. In this way, the lowest possible dose is given. The dermatologist who gives his own x-ray treatments will give only the minimum amount of radiation, because he is familiar with the natural course of the disease he is treating and can observe its progress.

Superficial therapy of benign diseases has been criticized because of the possibility of serious sequelae. Witten and Baer [2] have published the results of a study which provides an excellent answer to such criticisms. One thousand patients who had been treated with roentgen rays for benign or malignant skin diseases were reexamined 5 to 23 years after treatment. No sequelae resulted from total doses of 1,000 r of superficial radiation. This amount of radiation was administered in fractional doses, of the qualities generally used by dermatologists in the United States for benign dermatoses.

"Cook book" therapy is to be condemned. One should not arbitrarily say that acne conglobata, for example, requires eight treatments of 75 r each, given a week apart. Why give 8, when in some cases 6 will be sufficient and in others 10 or more may be needed?

It is certainly true that the use of radiation in the treatment of benign diseases should be justified in every case. Where diseases of the skin are concerned, the dermatologist, because of his training and experience, is certainly the person most capable of deciding whether it is justified in the individual case. He is not primarily concerned with radiation but with the cure of skin diseases. Radiation is not his only form of treatment or his most important one. He is trained to use it when necessary to augment his specialized procedures and topical medication.

The last and most important point I wish to make is that no therapy is of any value unless a proper and accurate diagnosis is first made. In fact, misdirected therapy can cause irreparable harm to a patient. The dermatologist's ability to diagnose skin diseases correctly and his knowledge of the various therapeutic approaches enable him to save his patients from unnecessary irradiation.

All in all, I do not believe that many unnecessary roentgens are being added to man's increasing systemic radiation burden by the qualified dermatologist.

Comment

It is regrettable that neither the scientific nor lay press has sufficiently stressed the fact that the dangers warned against in the National Academy of Sciences report are not specific dangers to the health of the individual, but theoretical and statistical dangers to the future of the human race. In mentioning the so-called permissible dose, they have neglected to emphasize that diagnostic and therapeutic irradiation in whatever dosage is necessary must always be considered permissible.

There have been two full generations since ionizing radiations were discovered, but only recently have

large numbers of the population received much medical irradiation. There has been no visible increase in the mutation rate, but such effects would not become evident for many generations. Studies based on total body irradiation of mice and fruit flies have shown that genetic mutations increase in number with an increase in radiation exposure. These findings are not capable of accurate extrapolation to human beings. Harmful mutant genes tend to be eliminated in the process of evolution.

We all have a small amount of radioactive potassium in our bodies, put there by Mother Nature, and we have been living with cosmic rays for thousands of years. Each of us receives about 15 r of total body irradiation from cosmic rays during his lifetime. The Atomic Energy Commission has estimated that each person has received an average of 0.1 r from all nuclear detonations up to the present time, including those of foreign nations. This is less than 1/100 of the average total lifetime dose from cosmic rays. People living at high altitudes get more than twice as much cosmic radiation as those living at sea level, yet such people as the Swiss Alpine mountaineers are very hardy. Also, there are areas in the world where large deposits of uranium ore make the ground highly radioactive, yet the natives of these areas have subsisted and perpetuated their kind for countless generations.

The evolutionary power of cellular recovery develops irrespective of the type of noxious agent causing damage.[9] It is logical to assume that the human body has a greater power of adaptation to environment than that of the mouse or the fruit fly.

True, it gives us an uneasy feeling when we realize that nothing is known about the long-range effects of radiation on the race of man, but perhaps there is no reason to assume that all of these effects will be bad ones and that there are no hidden remedial factors.

Experiments have shown that the life span of mice and rats is shortened by total body exposure to radiation above a certain limit of tolerance. This is considered by many to be cause for alarm in relationship to human beings. Yet, the span of human life has increased by 20 years since the discovery of ionizing radiations. A share of this increase is certainly due to the accurate and prompt diagnoses made possible by the use of diagnostic x-rays. The therapeutic use of x-rays has lengthened the lives of many patients with fatal diseases and has, in fact, cured many others, enabling them to live out their normal life expectancies. Are we to go backward in history because of a fear of radiation?

Within the medical profession, the fear of radiation therapy has been heightened by the fact that one medical group has pointed an accusing finger at other groups for misusing it. Actually, a few in all these groups have misused this modality. The criterion for using ionizing radiation should be that the user is trained in and understands radiation physics and biophysics and that he knows what he is treating, rather than that he should be a member of any particular coterie. No candidate can be certified by the American Board of Dermatology unless he is adequately trained in radiation and biophysics pertaining to superficial therapy and knows the indications and contraindications of irradiation of skin diseases.

Conclusions

This is a time for caution, but not for panic or fear of the unknown. The careless or casual use of radiation is to be condemned in any age, but the hazards of even this nuclear age are not sufficient to warrant the withholding of wisely administered radiation therapy from those who really need it.

When we use drugs, we have to consider the therapeutic index, that is, the amount of good the drug will do in comparison with the amount of harm it may possibly do. Radiation, too, has a therapeutic index. There is no safe dose, except for the patient who would be in much worse condition without it!

Those who sound warnings in the newspapers are doing a great disservice in alarming the public. Groups of physicians who cast aspersions on the use of radiation by other groups are doing a disservice to the medical profession. I am sure it will not help the cause of humanity to have the minds of the public or the physicians poisoned against radiation therapy. We must differentiate between mice and men, between total body irradiation of well people and medical irradiation of sick people.

We are doctors, bound by our Hippocratic oath to give our patients the best possible form of treatment for their ailments. We are in honor bound to use radiation therapy where it is imperative for the good of the patient.

1120 Montgomery Dr.

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DIFFERENTIAL DIAGNOSIS OF CONGENITAL HEART DISEASE IN INFANCY

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The relative value of the various data obtained from physical examination, history, electrocardiography, fluoroscopy, and roentgenography in the diagnosis of congential heart disease can be determined only from a series of patients whose thoracic viscera have been actually seen during subsequent surgery or at autopsy. Study of 279 autopsies of children has led to the formulation of 11 questions that should be answered in making a diagnosis. Painstaking analysis of all available data is important because an accurate diagnosis is possible in many cases. Surgery sometimes offers the only chance for survival, and for some congenital malformations surgery is not only palliative but curative.

It may be unequivocally stated that no discussion of the differential diagnosis of congenital heart disease should be based on other than autopsy evidence,[1] evidence obtained from surgery, or, in a few instances, from catheterization data which are as conclusive as autopsy evidence. The following discussion is based chiefly on a study of 279 autopsies performed at Children's Hospital in Washington, D. C., during the years 1935-1956. Observations at surgery considered equivalent to autopsy evidence are division of a patent ductus arteriosus, valvulotomy for infundibular or valvular pulmonary stenosis, excision of a coarctation, and closure of a septal defect. Catheterization data considered conclusive are passage of a catheter through a ductus or aortic septal defect, the catheter appearing below the diaphragm; and significantly high right-ventricular and low pulmonary-artery pressure establishing the presence of pulmonary or infundibular stenosis. In no instance is an associated lesion excluded. There is no quick and easy short cut to the diagnosis of congenital malformations. The evidence must be carefully gathered and painstakingly evaluated in every case.

History and Physical Examination

The history of the presence or absence of cardiac enlargement at birth is of importance, since relatively few lesions cause a strain on the heart sufficient to cause enlargement in fetal life. Congestive failure in infants is initially characterized by rapid respirations and usually, as it progresses, by liver enlargement; occasionally rales at the lung bases are prominent. The character and time of onset of congestive failure are of importance as indications of the severity and nature of the lesion and whether a very marked strain is thrown on either the right or the left ventricle. Of value is a positive history that the child either very definitely never has been cyanotic or very definitely has been cyanotic. There is a group about which one cannot be entirely certain as far as history is concerned. Observation of different degrees of cyanosis of the hands and feet in infants is not reliable, although a difference in the degree of cyanosis of the right and left hands, while rare, is significant. The character of the cry and the history either of anoxemic attacks or of any type of spells or feeding difficulties are of importance.

When approaching an infant for a physical examination one notes initially the degree of cyanosis at rest, observing the baby quietly without disturbing him, and then listens with the diaphragm of a Riger Bowles stethoscope to the character of the second sound, noting the presence or absence of a murmur, its character, and the pulse and respiratory rate. The rest of the information one wishes, e. g., the character of the pulses; the presence of edema, rales, liver enlargement and pulsation, and jugular distention and pulsation; presence of a thrill; and distribution of cyanosis, can be obtained accurately whether or not the baby is disturbed.

The blood pressure should always be obtained in both the arms and legs, using the flush technique with two cuffs if auscultation is not satisfactory. A cuff folded so that it may fit snugly around one-half to two-thirds of the upper arm is put in position. Another cuff is placed around the wrist and hand and pumped up to 300 mm. Then the cuff around the arm is quickly inflated above the expected systolic pressure and the hand cuff is released. The wrist and hand should be waxy white. The arm cuff is slowly and carefully deflated while the observer watches carefully for the appearance of the first flick of returning color. Values average about 10 points below those obtained by auscultation. In taking pressures in the leg it is of crucial importance to fold the cuff so that the same ratio is maintained between the cuff and upper leg as in the upper arm.

Questions That Aid in Diagnosis

Consistently accurate diagnoses can be made from good x-ray films alone, but a careful fluoroscopic examination in experienced hands is of importance.

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If, with an accurate history, careful physical examination, good x-ray films, fluoroscopic examination, and electrocardiograms, the data are carefully analyzed, and certain questions asked, one can make an accurate diagnosis in a surprisingly high percentage of cases. The questions discussed below are among those that aid in diagnosis.

1. Which chambers are enlarged? Are both ventricles and both auricles present? Is there a single ventricle or inversion of the cardiac chambers?

A study of the x-ray films and electrocardiograms can usually eliminate marked left-ventricular enlargement, as in subaortic stenosis, or marked right-ventricular enlargement, as in aortic atresia, as diagnoses. The voltage of the electrocardiogram in the precordial leads is the most reliable indication of chamber enlargement in infancy, if allowance is made for the normal right-ventricular preponderance during this period. Although the heart may weigh as much as twice the normal at autopsy, x-ray films may show little evidence of enlargement. Measurements of the intrinsicoid deflection are not ordinarily of value in infants' hearts because the ventricular wall must increase roughly 4 mm. in thickness to produce an increase of 0.01 second in the width of the intrinsicoid deflection, and hypertrophy of this degree seldom occurs in infancy.

Enlargement of the right ventricle is difficult to diagnose by x-ray examination except when it is marked, as in a truncus arteriosus. The anterior contour on fluoroscopy projects forward and may infringe on the sternum in the left anterior-oblique position; sometimes this is better seen in the right anterior-oblique position. Considerable enlargement of the right ventricle may be present without producing striking changes on fluoroscopy or x-ray examination.

A large peaked P_2 in the electrocardiogram is pathognomonic of an enlarged right auricle, although the right auricle may be enlarged without this finding. The high voltage of the P wave appears to bear a rough relation to the pressure in the right auricle. In a transposition of the great vessels, where the right auricle may be anatomically as large as the right auricle of an isolated pulmonary valvular stenosis, the voltage of the P wave is not increased. It is increased when pulmonary stenosis is present. Broad P waves in lead 2 suggest left-auricular enlargement, although posterior deviation of the esophagus seen on x-rays made after a barium swallow is the most reliable indication of enlargement of this chamber.

The diagnosis of a single ventricle cannot be made with certainty from the electrocardiogram, in spite of the absence of the ventricular septum. The precordial leads usually show "right-ventricular preponderance," although "left-ventricular preponderance" may be present. With evidence of combined ventricular hypertrophy, diagnosis of a single ventricle may be excluded with a fair degree of certainty. If the cardiac contour is somewhat bizarre, with more of the ventricular portion on the right than usual, a single ventricle may be suspected, although this indication of arrested development before the bulboventricular loop swings to the left may occur in any primitive heart. If the heart appears enlarged in the anteroposterior position and flattened in the left anterior-oblique position, a single ventricle with complete transposition may be suspected. The basic lesion in this malformation is usually inversion of the bulboventricular loop, and the resulting flattening of the heart is reflected in the oblique position. The anatomy of the various forms of single ventricle without transposition may be readily correlated with the stage of embryologic development at which arrest has occurred, and some malrotation of the vessels is the rule, but the anatomy of a single ventricle with complete transposition is very different and is usually the result of inversion.

True inversion of the auricles is extremely rare but when present may be readily diagnosed by the character of the P waves in lead 1 and lead aVR, which is that of a dextrocardia. In a dextrocardia an upright P wave in lead 1 also means inversion of the auricles. Inversion of the ventricles is even rarer and is present in a true corrected transposition. Even at the autopsy table it is sometimes difficult in the more complicated malformations to ascertain whether ventricular inversion is present.

2. Which great vessels are enlarged? Are both present, normal, and in normal positions? Their branches?

Moderate degrees of enlargement of the pulmonary artery are best observed in the right anterior-oblique position. When a true truncus arteriosus is present there is a distinct widening of the great-vessel shadow in the anteroposterior position which is not present when partitioning of the truncus has occurred with subsequent atresia of the pulmonary artery. When the pulmonary artery is absent the very clear pure second sound is quite characteristic. The absence of a murmur in an infant always raises the question of complete pulmonary atresia. It should be remembered that, even if the pulmonary artery is absent, right and left pulmonary arteries are, more often than not, present for operative purposes. The presence of an atypical continuous murmur should always raise the question of complete absence of the pulmonary arteries, since the blood supply to the lungs in this case may be by way of bronchial arteries from a true truncus arteriosus, and in this instance right and left pulmonary arteries are not present for operative purposes. When the blood supply to the lungs is via a patent ductus arteriosus in pulmonary atresia a continuous murmur is not present, and, as has been said, usually no murmur is present.

A narrowing of the great-vessel shadow may indicate a hypoplastic aorta, which is a rather constant feature of an atrioventricularis communis. This find-

V 16
1957

ing is also present in complete transposition of the great vessels with a widening of the shadow in the left anterior-oblique position. Often the great vessels will not be completely transposed, and in these instances the width of the great-vessel shadow is of no help. When the pulmonary artery overrides, it is greatly enlarged. An esophagram should reveal a vascular ring, anomalous right subclavian artery, or right aortic arch. Preductal coarctation is accompanied by slight but definite difference in blood pressure (more than 15 points) between the arms and legs with the flush technique, and usually right-ventricular enlargement in early infancy and marked right-sided failure. Cyanosis of the feet may or may not be present and is not usually a helpful point in differential diagnosis.

The clinical story in an infant with anomalous origin of the left coronary artery from the pulmonary artery is so characteristic that the experienced pediatric cardiologist will suspect the diagnosis from the history. If one has once seen such an infant in the course of the attacks of anginal pain which these children experience, one will not fail to recognize their nature. The electrocardiogram shows evidence of marked left-ventricular enlargement such as can occur in extreme subaortic stenosis or endocardial fibroelastosis, which cannot be differentiated from anomalous origin of the left coronary artery from the pulmonary artery from the electocardiogram.

When the baby has any signs of cerebral anoxia, such as "spells" or slow respirations where rapid ones would be expected, the aorta almost certainly arises from the right ventricle or is in some manner receiving a large amount of venous blood. Similarly, if the coronary arteries are receiving blood which is almost entirely venous, the voltage on the electrocardiogram may be low, indicating myocardial anoxia. Although this may not always be the case, when such a finding is present it is most helpful. One or both of these findings should always bring to mind the possibility of extreme dextroposition of the aorta with pulmonary stenosis. This is an important point because when extreme dextroposition is present an auricular septal defect should always be created in addition to an anastomosis.

3. Is the systemic venous return normal?

This question cannot be answered in infants without angiocardiography but should always be borne in mind when considering cyanosis not readily explained on other grounds. It is very often abnormal in isolated dextrocardia and levocardia with situs inversus and in a congenital malformation associated with congenital absence of the spleen. Distention of the superior vena cava without evidence of a shunt in the lung fields may indicate a rare anomaly of the abdominal venous return.

4. Is the pulmonary venous return normal?

When all pulmonary veins drain into the right auricle the lung fields are obviously congested, although in the newborn child the congestion may not be as striking as it is when the child survives for a few months. There is great right-auricular enlargement. This malformation can be readily diagnosed during life, although the findings closely resemble those in aortic atresia and preductal coarctation. Infants with aortic atresia seldom survive beyond the first month of life.

Cyanosis is not marked in these cases and is of the type that goes with a reduced cardiac output, which differs so markedly from that which accompanies a venous arterial shunt. Partial anomalies of the pulmonary venous return have no sharply distinguishing features. Rare anomalies such as complete atresia of the pulmonary veins with the pulmonary venous return by way of the bronchial veins are occasionally encountered. It should also be remembered that the anomalous pulmonary venous connection may be with the inferior vena cava.

5. Is an arteriovenous shunt present?

In infants this can be most readily determined by a study of the vascularity of the lung fields. It should be remembered that the lung fields of newborn children are deceptively clear. Such a shunt may occur by way of a pulmonary vein, auricular septal defect, patent foramen primum, atrioventricularis communis, ventricular septal defect (including the rare form where the jet is into the right auricle), aortic septal defect, overriding pulmonary artery, truncus arteriosus, patent ductus arteriosus, ruptured aneurysm of the sinus of Valsalva, arteriovenous aneurysm of the lung or coronary sinus, and coronary artery. The second sound in the second left intercostal space is almost invariably somewhat accentuated if a shunt is present. It should be remembered that the communications mentioned above may be present, although no shunt, or a venous-arterial shunt, may be present. If the second sound is diminished or absent, an arteriovenous shunt is most unlikely.

6. Is a venous-arterial shunt present?

In small infants the presence of mild degrees of cyanosis is not very easy to detect, and infants who at postmortem examination reveal lesions which must have produced a venous-arterial shunt still will have shown only little or questionable cyanosis clinically. Infants with a diminished cardiac output may show an entirely different type of cyanosis due to peripheral stasis. When definite unquestionable cyanosis is present, it usually means that a venous-arterial shunt of considerable magnitude is present, but, if it is only questionable or not detected, a venous-arterial shunt may still be present. A lesion theoretically causing differential cyanosis in the hands and feet may not in fact cause it.

7. Is congestive failure present?

The diagnosis of congestive failure in infancy when it is early and minimal is not easy; it can be readily confused with pneumonia. The earliest sign of failure in infancy is an increase in the respiratory rate. The white blood cell count is of little help,

since it may be normally elevated in small infants; careful study of differential counts may, however, be of value. Even study of sections of the lungs and liver at autopsy is not always conclusive. A period of observation is often necessary to make the distinction. If definite failure is present, knowledge of the type of failure is of distinct value in making a diagnosis. If the failure is predominantly right-sided, as in aortic atresia with a rapidly enlarging liver, a lesion producing great strain on the right ventricle may be deduced. If rales in the lungs and rapid respirations are prominent, as in a truncus arteriosus, a marked arteriovenous shunt is probably present.

8. Is cerebral anoxemia present?

The most frequently encountered sign of cerebral anoxemia in infancy is a decrease in the respiratory rate, especially when it would normally be expected to be increased, as in the presence of congestive failure. Brief periods of apnea and of unconsciousness sometimes accompanied by twitching convulsive movements of the extremities are the well-known characteristic "spells" of cerebral anoxemia. They should be treated with 1 mg. of morphine per 10 lb. (4.5 kg.) of body weight, and oxygen. These apneic spells of cerebral anoxemia should not be confused with the spells of pain which occur with anomalous origin of the left coronary artery from the pulmonary artery, or the spells which occur with aortic or subaortic stenosis. Older infants will assume a squatting position, "knee-chesting," in bed. Knee-chesting may also occur in primary myocarditis of undetermined etiology. Lesions causing a diminished cardiac output should also be considered when signs of cerebral anoxemia are present.

9. Is the blood supply to the body normal or diminished?

The character of the pulses in small infants and retardation of growth in older children are the best indications of diminished blood supply to the body such as occurs in aortic atresia, aortic or subaortic stenosis, tricuspid atresia with transposition, or any large arteriovenous shunt. When a truncus arteriosus is present the pulses are very full. They are normal in a transposition of the great vessels.

10. Is the blood supply to the lungs normal, excessive, or diminished?

In early infancy the lung fields may be deceptively clear in spite of a large shunt. Generally speaking, there is no doubt that a decrease in the blood supply to the lungs is present in small infants. Although no evidence of right and left pulmonary arteries may be seen on x-ray or fluoroscopic examination, they are usually present and large enough for a Potts anastomosis even though the main pulmonary artery may be atresic. As the child grows older the presence of collateral circulation may obscure the fact that pulmonary stenosis is present. Usually, however, the clarity of the peripheral portion of the lung fields is evident.

11. Is a heart murmur present?

The absence of a murmur in a cyanotic infant always raises the question of a complete or almost complete pulmonary atresia. Isolated pulmonary valvular stenosis, with or without an auricular septal defect, has in this series always been accompanied by a significant murmur. This murmur and the systolic murmur of a patent ductus arteriosus are almost invariably well heard in the back. Although a transmission of murmurs in infants is not too reliable, there is an appreciable difference in the intensity of the murmur of a ventricular septal defect communicating with the inflow tract of the right ventricle and a murmur produced by the flow of blood from a single ventricle into a diminutive outlet chamber when one listens over the back; these murmurs are not well transmitted to this area. There are slight but characteristic differences between the systolic murmurs of a patent ductus arteriosus, a high ventricular septal defect communicating with the outflow tract of the right ventricle, and a mild isolated valvular stenosis.

Types of Malformation

A certain knowledge of the types of malformation which may be expected in infancy is necessary in making a final diagnosis. If a newborn infant is in difficulties during the first month of life the operable lesions which must be considered are (1) transposition of the great vessels, (2) preductal coarctation, (3) pulmonary stenosis, (4) drainage of all pulmonary veins into the right auricle, and (5) vascular ring. If he develops difficulties somewhat later there must be considered in addition to these lesions the shunt lesions alone or in combination—patent ductus arteriosus, atrioventricularis communis, ventricular septal defect—and the lesions which cause left-ventricular preponderance—endocardial fibroelastosis, anomalous origin of the left coronary artery from the pulmonary artery, and aortic stenosis. Every effort should be made to make an exact diagnosis in each case, but these lesions in particular should not be missed.

Transposition of Great Vessels.—Transposition of the great vessels in infancy, characterized by cyanosis, a typical x-ray contour, and increased vascularity of the lung fields with a rapidly enlarging heart, may usually rather readily be diagnosed in the neonatal period. In the older groups diagnosis becomes more difficult, especially since a bicuspid pulmonary valve with some degree of pulmonary stenosis is more often present in children who survive to older ages. In older infants the combination of a single auricle and single ventricle with transposition is especially difficult to differentiate from a transposition. This lesion, in our present state of knowledge, should be treated by the creation of a large auricular septal defect. Of the many remedial procedures for transposition which have been attempted, there seem to be none which do not create an imbalance of the circulation with either right-

sided or left-sided failure immediately or ultimately resulting. A Blalock-Taussig anastomosis in addition to an auricular septal defect, which theoretically should be of great benefit in an older child with pulmonary stenosis and low pulmonary-artery pressure, in actual practice may result in pulmonary edema and death. The creation of a large auricular septal defect without an anastomosis is the procedure of choice, since it can be readily repaired at the time a more permanent correction is done. The possibility of doing a switch-over operation carrying the left coronary artery with the aorta, leaving the right coronary artery in situ, was apparent some years ago.[2] The rare patients with an anomalous origin of the right coronary artery usually do well. The work of Mustard and others [3] toward the perfection of this operation offers the most promise for the correction of transpositions.

Preductal Coarctation.—A preductal coarctation is characterized by right-ventricular enlargement and marked right-ventricular failure; the vascularity of the lung fields is not strikingly increased. The diagnosis depends on the blood pressure in the arms exceeding the blood pressure in the legs by not less than 15 points using the flush technique. The femoral pulses are palpable. As with a patent ductus arteriosus with pulmonary stenosis, tying off the ductus initially will cause the child to go, in this instance, into acute left-ventricular failure. A preductal coarctation should be repaired by clamping off the aorta proximal to the coarctation and both the ductus and aorta simultaneously distal to the coarctation; the coarctation and ductus may then be repaired. Approximately 50% of children with preductal coarctation have associated lesions of the mitral or aortic valve or other anomalies; the presence of a hypoplastic mitral valve must always be considered.

Pulmonary Stenosis.—An attempt should be made to maintain an infant with any form of tetralogy of Fallot or tricuspid atresia until he is old enough for a Blalock-Taussig anastomosis. A Potts procedure should be done only as an emergency on a small infant, and the size of the anastomosis should be kept under 4 mm.[4] or the child will ultimately develop cardiac enlargement. The mortality from open cardiac surgery for tetralogy of Fallot is high. A Blalock-Taussig anastomosis, a procedure of established value, is the operation of choice at this time.

Truncus Arteriosus.—A true truncus arteriosus cannot be helped by cardiac surgery in our present state of knowledge, whether the pulmonary arteries arise from the truncus or the lungs are supplied by way of bronchial arteries. An atypical continuous murmur in the latter situation is not due to a patent ductus arteriosus but to collateral circulation through the bronchial arteries and is rather certain evidence that pulmonary arteries are not present. An attempt to increase the pulmonary circulation by a pleurectomy has yielded a very good long-term result in one case.[4b]

Drainage of All Pulmonary Veins into Right Auricle.—When all pulmonary veins drain into the right auricle an anastomosis should be performed between the vessel into which the pulmonary veins drain and the waist of the left auricle, with later partial ligation of the common pulmonary vein distal to the anastomosis. If the pulmonary veins drain directly into the right auricle an auricular septal defect should be enlarged and later repaired, shunting the pulmonary venous blood into the left auricle. A hypoplastic left auricle, mitral valve, and left ventricle usually accompany total anomalous pulmonary venous return, and repair must be done in two stages to allow time for these to enlarge. The only other lesion with which this lesion may be readily confused (aortic atresia) carries a 100% mortality and is not amenable to cardiac surgery at present.

Vascular Ring.—The dysphagia and stridor which accompany a vascular ring and the appearance of the esophagram are characteristic. It is of crucial importance to anchor the aorta to the sternum anteriorly when the ring is divided at surgery.

Patent Ductus Arteriosus.—A large patent ductus arteriosus is characterized by left-auricular and ventricular enlargement, increased vascularity of the lung fields, an accentuated second sound, and a murmur which may be continuous or systolic in time and rarely is not present at all. It is the one shunt lesion which should not be missed. If a continuous murmur is not present and there is a question about the presence of a ductus, an aortogram should be done. Even though only a systolic murmur is present, it differs from other precordial systolic murmurs in its late systolic accentuation and it is well heard in the back. The presence of evidence of right-ventricular hypertrophy on the electrocardiogram should not rule out the presence of a patent ductus arteriosus, since a child with a large patency of the ductus arteriosus may develop pulmonary valvular insufficiency and right-sided failure which, when controlled with rest and digitalis, will be reversed to left-ventricular preponderance. This is rare but can occur. The possibility of an associated lesion should always be borne in mind, especially the possibility of an associated pure pulmonary stenosis. If sharp-peaked P waves are present in lead 2 or, in older children, if there is any evidence of right-ventricular hypertrophy on the electrocardiogram or a precordial bulge, the surgeon should be alerted to the possibility of a pulmonary stenosis, which should always be corrected prior to tying off the ductus arteriosus, since its ligation may throw an excessive burden on the right ventricle of blood previously shunted through the lungs, resulting in acute right-sided failure.

In the rare situation where it is necessary to do a thoracotomy to establish the diagnosis, it should be done before the child is dying. If a patent ductus arteriosus is found and ligated, no harm is done by

surgery. If no patency is found and no remedial surgery is performed, the child has, in addition to his cardiac lesion, the stress and strain on the heart that is produced by a thoractomy.[4a]

Atrioventricularis Communis.—The clinical electrocardiographic and x-ray findings in an atrioventricularis communis are usually, although not invariably, characteristic, with left-axis deviation and right-ventricular preponderance on the electrocardiogram. It is, however, possible to confuse this lesion with certain forms of single ventricle with complete transposition. It should be stated in passing that a true patent foramen primum is a rather rare lesion, and most cases of the "patent foramen primum type" described in recent reports are in actuality cases of atrioventricularis communis. An atrioventricularis communis should be closed with the use of a pump-oxygenator, using a prosthesis, with no attempt to close the lower posterior margin except for a few fine anchoring sutures to the surface of the center of the posterior endocardial cushion. Defects under this structure, which are usually small, should not be repaired, since this cannot be done without danger of interfering with the conduction system. Possibly a collar-button-shaped piece of nonabsorbable polyvinyl (Ivalon) sponge could be pushed through such a defect and anchored a safe distance from the crest of the ventricular septum in the right ventricle. An obvious cleft in the anterior cusp, formed by a failure of the left tubercle of the anterior endocardial cushion to fuse with the parietal half of the primordium of the anterior cusp of the mitral valve, should be repaired, but no attempt should be made to reconstruct the anterior and posterior endocardial cushions into a normal posterior mitral cusp and septal tricuspid cusp.

Ventricular Septal Defect.—The diagnosis of a ventricular septal defect in small infants is most difficult and is essentially an exclusion diagnosis. If an acyanotic infant or one with only transient episodes of cyanosis in congestive failure does not prove to have a patent ductus arteriosus, the characteristic findings of an atrioventricularis communis, a contour suggesting a single ventricle with transposition, the pressure differences of a preductal coarctation, or the contour and characteristic second sound of a truncus arteriosus from which the pulmonary arteries arise, he probably has a rather large ventricular septal defect which communicates between the left ventricle and the inflow tract of the right ventricle in proximity to the septal cusp of the tricuspid valve or, more rarely, into the infundibulum of the pulmonary artery. There is more likely to be overriding of the aorta in infancy (Eisenmenger complex). A large auricular septal defect—even a single auricle as an isolated lesion—does not usually produce congestive failure in early infancy. Children with isolated ventricular septal defects who go into failure in infancy will usually survive with vigorous antibiotic therapy and treatment of their failure. Rarely such children will not respond, and these infants may benefit from a "pulmonary tuck" operation[5] as a stopgap procedure with the hope that they will survive to an age when open cardiac surgery is less hazardous. The decision must be carefully weighed in each individual case. A ventricular septal defect is often accompanied by a small auricular septal defect.

Endocardial Fibroelastosis and Anomalous Origin of Left Coronary Artery.—Endocardial fibroelastosis and anomalous origin of the left coronary artery from the pulmonary artery are distinguished by marked left-ventricular enlargement, both on x-ray and electrocardiogram, in a child without cyanosis or evidence of a shunt or aortic stenosis. (However, right ventricular preponderance may accompany endocardial fibroelastosis in the presence of an associated anomaly of the mitral valve.) A secondary type of marked endocardial fibroelastosis, which is quite distinct from the primary type, develops in all cases of anomalous origin of the left coronary artery from the pulmonary artery. For this reason, a simple transposition of the segment of the pulmonary artery from which the left coronary artery arises to the aorta, even if technically possible as an open procedure, would not be physiologically sound. These two lesions should both be treated by one of the procedures for vascularization of the left ventricle.

Aortic Stenosis.—Children with congenital aortic or subaortic stenosis, lesions which are rare, should have open remedial surgery without too much delay, if they are having fainting spells. These children have a tendency to die suddenly, and marked myocardial fibrosis due to coronary insufficiency is found in those who survive for any period.

Comment

Far too many infants are being allowed to die of congenital malformations of the heart for which not only palliative but curative surgical procedures are available. Funds are available to provide financial assistance for such children and although the surgical mortality is admittedly high these infants should have their chance for survival. They remain the greatest challenge in the field of cardiovascular surgery.

An infant with a congenital malformation amenable to surgery should only be operated on at a center with a record of successful achievement in older children with less complicated malformations and facilities for handling small infants. It is an experienced, smoothly organized team which is most needed for success, regardless of the abilities of individual members. Given an experienced team, it is the abilities and experience of the surgeon which are paramount. It has been my observation that it is the centers and surgeons with the most

experience who are most keenly aware of their own limitations and most willing to refer complicated cases to those in whose hands the patient's chances for survival are the greatest.

Summary

The differential diagnosis of congenital malformations of the heart in infancy requires painstaking analysis of all available data. An accurate diagnosis can be made in a high percentage of the cases in which the lesions are amenable to surgery. Infants with congenital malformations should be operated on only in centers where experienced personnel are available.

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TWIXT THE CUP AND THE LIP

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Drugs are discovered, manufactured, and tested by scientific methods. On the other hand they are produced and marketed through a blend of personal and social motives; they are prescribed by doctors with varying knowledges and skills, and they are taken by patients who have different degrees of information, interest, and precision. Drugs are brewed in the cup of science; they are drunk through a patient's lips, and "there's many a slip twixt the cup and the lip."

Scientific attention is usually turned toward the discovery of drugs; in the present paper I shall consider the path from their development to their use. As an example, let us take chlortetracycline, one of the first antibiotics to be produced by a pharmaceutical company. After screening hundreds of specimens of soil, Duggar isolated Streptomyces aureofaciens, in the fall of 1945. Its in vitro antibacterial activity was demonstrated later in the same year.

Preparation of crude concentrates that protected animals against bacterial infections required an entire year, and further purification and initiation of large-scale production required nearly two years more. It was not until September, 1948, that clinical tests were considered adequate for submission of the data to the Food and Drug Administration. Approval by this agency was granted in October, 1948, and chlortetracycline was finally marketed on Dec. 1, 1948.[1]

The development of a drug is an intricate process, involving researchers, manufacturers, clinical investigators, and many others. All of the information obtained about the drug must be brought to the practicing physician, who is the one to prescribe or administer the drug, and it is important that this information be timely and accurate. In the evaluation of new drugs, the practicing physician should do three things. First, he should learn the mechanism by which the drug works, rather than the results somebody says it will produce. By learning the generic name, the physician can understand much about the drug. Second, when asked by a patient to prescribe a drug that is not indicated, the good physician explains rather than prescribes. Last, doctors should read pharmaceutical advertisements critically, and not be hesitant to write to editors of journals as well as drug manufacturers when they question the truth. Only in these ways can the medical profession advise and assist such a dedicated organization as the Food and Drug Administration to properly judge the merits of a drug.

From the Research and Educational Hospitals and the Department of Medicine, University of Illinois.

Chairman's address, read before the Section on Experimental Medicine and Therapeutics at the 106th Annual Meeting of the American Medical Association, New York, June 4, 1957.

The path of a drug from cup to lip, which took over three years in the case of chlortetracycline, is shown in Figure 1. Basic research by medical schools, pharmaceutical companies, and others leads to the discovery of a new drug. It is produced in a form suitable for administration by the pharmaceutical manufacturer. Its efficacy must then be tested in vitro, and its efficacy and toxicity, in lower animals. If these tests are satisfactory, the drug is tried in patients by investigators outside of the pharmaceutical industry. The accumulated information is then submitted to the Food and Drug Administration for approval or to the National Institutes of Health in the case of biological products. When approval is forthcoming the drug can be packaged, advertised to the profession, and sold. At the same time, investigators who have tried the drug in patients are informing the medical profession when and how this drug should be used. All of these paths lead a single goal: administration to patients. This benefits the patient through the prevention, amelioration, or cure of disease and brings profits to the pharmaceutical industry and related groups. These twin benefits act as sources of energy to start the process over again.

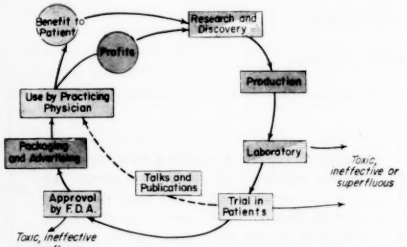

Fig. 1. Diagonal lines refer to the pharmaceutical industry; horizontal lines, to the investigators in medical schools and hospitals, and stippled areas to other groups (government agencies, the practicing physician, and the patient).

This system is an outstanding example of man's genius for organization. It has been developed by idealistic motivation, along with down-to-earth planning; it balances the interests of scientist, investor, producer, physician, and patient. And it has filled the cup to overflowing. The number of effective drugs is beyond the highest hopes of a century ago and is increasing all the time. In the thirty-year period from 1905 to 1935 new drugs were introduced into the United States "Pharmacopeia" at a rate that averaged six per year, while in the succeeding twenty years the average yearly rate was thirty-seven.[2]

Yet the system, like all systems, can be perverted. The process of fundamental research, followed by the development of worth-while new products and the successive stages necessary to bring them to the patient, is a long one. The desire to help the patient and the desire for profits provide sufficient energy to power the process; but some have discovered that if this energy is applied at a later stage, the path from profit back to profit again can be speeded up. This is shown in Figure 2. Energy, instead of being directed toward research and the discovery of new drugs, is frittered away on dozens of unimportant modifications designed to compete with drugs that are already available. One example of this is the marketing of mixtures of antibiotics. As of November, 1956, there were on the market twenty-nine preparations containing two antibiotics, twenty containing three, eight containing four, and four preparations that contained five antibiotics apiece.[3] I have shown elsewhere [4] that there is no good reason for the use of any of these sixty-one mixtures.

If this trend continues, we shall soon reach the chaos that exists in Germany. According to a recent article in *The Lancet*,[5] there are about 6000 proprietary preparations marketed in Western Germany, made by 565 different firms. Most of these preparations contain several or many substances; five or six is the rule, and more than ten is not at all rare. One firm has put twenty-two different substances into one tablet. It has become unfashionable to use one drug by itself. When the author of the article asked for ephedrine tablets in a big hospital, he was told that these were no longer stocked.

This side-tracking of energy within the system has further effects. When the drugs that are produced so prodigally are tested in the laboratory, only those are eliminated that are obviously toxic. Drugs that are superfluous because they duplicate the action of others that are already available and drugs that are of dubious effectiveness are continued in the process and eventually reach the market (Fig. 2). For instance, thirty-three different antihistiminic drugs are being sold at present,[6] all having practically identical actions but different names and dosages. Similar excesses can be found among other groups of drugs, especially the vitamins, the antispasmodics, and the tranquilizing drugs.

At the next step in the process pressure is applied upon investigators to report that all the drugs recently produced are beneficial to patients, that they are better than existing drugs, and that they have fewer side-effects. Since this tremendous multiplication of new drugs exhausts the existing facilities for clinical investigation, inexperienced investigators are cajoled into assessing drugs in patients. Some learn the proper methods and acquire a critical sense during the experience; most do not but unwittingly call a spade a diamond—to the confusion of the Food and Drug Administration, the exasperation of the experienced and honest investigators, the quick profit of that particular manufacturer, and the loss of prestige of the medical profession and of the pharmaceutical industry as a whole.

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Increased pressure is applied in turn upon the Food and Drug Administration. No words can speak too highly of the services rendered to physicians and patient alike by this dedicated body of public servants. Quietly and unobtrusively, patiently and honestly, they attempt to judge the merits of a drug solely on the evidence presented to them. Their problems, however, are similar to those of every regulatory agency of the government: they hear one side of the story loudly and incessantly; they hear the other side only sporadically and feebly. It is the drug manufacturer's business to present his viewpoint; it is to his interest to present it attractively and forcibly. The consumers, on the other hand, have no paid advocates. Their viewpoint is presented by persons who must spare time from everything else to do it and who are not usually well acquainted with these channels of communication. This is all the more reason why, in the field of the regulation of drugs, physicians and organizations of physicians, such as the American Medical Association, should make it their business to advise the Food and Drug Administration.

The excess pressure is applied next to advertising. The description of the drug on the label and the circular accompanying the package must be accurate and well documented and must be approved by the Food and Drug Administration. Advertising pertaining to a drug, on the other hand, is under the jurisdiction of the Federal Trade Commission, who can stop a company from making a particular statement only if the statement constitutes an unfair or deceptive act. This opens the way for abuses.

Within recent years the drug industry has discovered that the techniques that had been used so successfully in the advertising of soaps and tooth pastes and of cigarettes, automobiles, and whiskey could be used as successfully to advertise drugs to doctors. Advertising to doctors has become flamboyant, as shown by two-page gaily colored spreads in nearly every medical journal. Advertising has become incessant; nearly identical advertisements for a new drug appear in each day's mail for weeks on end. Advertising is without question confusing. The multiplicity of trade names makes it difficult to remember the actions and uses of any. Richardson Evans, writing in the English *National Review* in 1890, said: "Suppose a dozen people are in a small room. Two begin to talk to each other at the top of their voices. The others must either give up conversation or shout also. The result is that no one hears as well as before and that comfort is at an end. So it is with advertising. . . ." [7] Advertising to doctors has now reached this peak, and we are deafened by the din.

This leads us to the next step in the process: the use of drugs by the practicing physician. The doctor's sources of information include textbooks, journals, and speeches, written or delivered by those who have studied the drugs in laboratories and in patients. Most practicing physicians do not see a sufficient number of patients with any one disease to make a critical trial of a new drug themselves. When the drug becomes available the most they can do is to acquire skill in its use. If this information is "beamed" clear and true to the doctor, he is willing to listen to the "commercials" and patronize those who have, through their investments and their foresight, brought the drugs to him. But today the "commercials" are so loud, incessant, and brash that they jam the channels of communication. The bewildered physician prescribes by suggestion and not from information.

At this point the reader will say: "Well, even if this makes the physician a shifting weathervane and the patient an unwitting guinea pig, the writer must be an ingenuous idealist to expect the pharmaceutical manufacturers to change their methods so long as they are putting money in their pockets." This last phrase is the key to the answer. You will recall that the twin sources of energy for the system are profits and benefit to the patient. It is already evi-

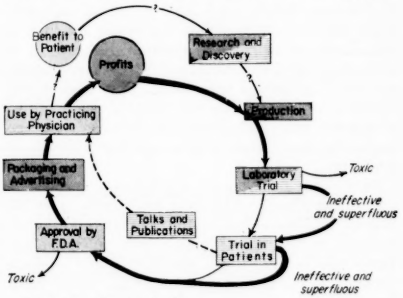

Fig. 2.—See figure 1 for key.

dent to most doctors, and it will soon become evident to the public, that energy has been diverted from the pathway that leads to the greatest benefit to patients. With the inevitable disillusionment that comes with the failure of each useless modification to make any advance, the pharmaceutical industry will lose its prestige and with this will lose its financial backing. It will fall, and the medical profession will be dragged down with it. Since such a catastrophe would involve doctor, industry, and patient alike, we may well look to see what each can do about it.

To physicians I would say first: Keep informed. Learn the mechanisms by which drugs work, rather than the results somebody says they produce. Look for and remember the generic name, for this tells something about the drug, while the trade name tells nothing. Avoid substituting drugs for diagnoses.

Furthermore, since advertisements for new drugs appear so quickly, some mechanism must be set up to bring authoritative information rapidly from in-

vestigator to practicing physician. The challenge is thrown to medical societies, medical schools, and specialty groups: keep the profession informed!

My second suggestion to physicians is, inform the public. As Vannevar Bush has said*: ". . . public opinion is not formed by the radio and the press or even by those who control these media. It is formed by that minute fraction of the population which thinks and speaks, by that small but powerful minority, disagreeing on every issue, arguing and ridiculing, which looks beyond the diversion of the moment and influences because it labors to understand." With regard to drugs we are that "small but powerful minority," and we must use every means to make our opinion known. When a doctor prescribes a drug for no reason except that the patients wants that drug, the doctor is allowing the lay press to take over the job of health educator to his patients. The good physician explains instead of prescribing.

My third suggestion to doctors is to reject misleading information and repudiate those who purvey it. Doctors should read advertisements critically. They should write to editors of journals and to drug manufacturers when they question the truth of an advertisement. They should not listen again to someone who has misled them once. They should prescribe as far as possible only those drugs made by companies with high standards of advertising and read only the journals that accept that kind of advertising.

In the past the Council on Pharmacy and Chemistry of the American Medical Association (now the Council on Drugs) has led the fight against false advertising by quacks and vendors of patent medicines. The battle front of today has shifted, and false advertising to the public is no longer the major issue. For the future the Council needs to align its forces against false advertising to the doctor.

To pharmaceutical manufacturers, I would make three suggestions: (1) that they emphasize basic research and the discovery of new drugs and avoid minor variations of existing drugs; (2) that they weigh the proposals of their sales departments in the light of advice from their scientific staffs and from competent impartial clinical investigators, and (3) that they revise their advertising methods. Advertising should not be premature; advertisements for a new drug should not appear before a single clinical article is published in a reputable medical journal. Advertisements should be in keeping with the dignity of the industry from which they come and the good sense of the profession to which they go. The time is already past due for reputable manufacturers to establish a code of ethics for advertising and abide by it. When this has been done the words "ethical manufacturer" will mean a manufacturer who works for the good of the public rather than meaning, as at present, one who advertises only to the medical profession, no matter how he advertises.

The regulatory agencies of the government function as impartial judges for the benefit of the consumer. Laws always lag behind actuality, and budgets are always deficient; but in spite of these limitations the regulatory agencies deserve great credit for keeping the present system from getting out of hand altogether. How can they do the job better? Certainly they should insist upon honest and thorough investigations by clinical investigators. They should inquire how the cases were obtained for trial; were they selected out of a larger number of cases and, if so, by what criteria? Funds should be available to them for financing tests of drugs when the evidence submitted is equivocal or unconvincing. They should also be able to employ consultants to advise them in difficult cases. These agencies need the strong backing of the medical profession; the patient's welfare must be kept continually before them so as to counteract the obvious pressures from the pharmaceutical industry.

Many people believe that the laws should be amended so that the Food and Drug Administration can pass on the efficacy of a drug. At present, except in the case of the drugs that are certified, which include insulin and certain antibiotics, the Food and Drug Administration cannot prohibit the sale of an ineffective drug; its only recourse is to seize the drug as misbranded if a therapeutic effect is claimed in the circular that accompanies the package. This seems a roundabout way to protect the public.

Furthermore, the present laws leave all advertising, except that which accompanies the package, to a separate agency, the Federal Trade Commission. In spite of the excellent cooperation that exists between the two agencies, this is a cumbersome method which has not succeeded in giving adequate protection to the patient. Many people believe that the law could be enforced more efficiently and more completely if advertising as well as labeling were regulated by the Food and Drug Administration.

My suggestions can be summarized in two words: information and regulation; prompt and exact information for the practicing physician from the investigator, the professional societies, the medical journals and the specialty groups; willingness on the part of capable investigators, teachers, and other leaders in medicine to spend time in spreading the truth about drugs; probity and sanity on the part of the manufacturers in keeping advertising factual rather than suggestive, direct rather than irrelevant, truthful rather than misleading; recognition on the part of the practicing physician that his is the final responsibility for the use of a drug and that he cannot give this decision over to anyone else. Regulation there must be for those who will not work from higher motives: regulation by industry to the extent that it can be done; regulation by organizations of physicians where they can help, and regulation by

government where the others fail to do the work. Let those who object to the third alternative strengthen the first two.

These things should be done; these things can be done; shall we here agree that these things will be done? In the words of George Washington, "Let us raise a standard to which the wise and just can repair."

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UNIFORMED SERVICES DEPENDENTS' MEDICAL CARE PROGRAM

Major Gen. Paul I. Robinson (MC), U. S. Army

A program to provide improved, standard medical care for dependents of members of the Army, Navy, Marine Corps, Air Force, Coast Guard, and certain other uniformed government services was established by law Dec. 7, 1956. Six months of operation yielded data from 21,363 cases indicating the trend of the program. Maternity cases comprised 47% of the total. Twenty per cent of the participants in the program were males, and the majority of these were children. Physicians' fee schedules have been developed with the help of teams comprised of a physician, a certified contracting officer, a lawyer, and an auditor. It has been difficult to specify how much service should be included for a given fee. Other problems include the provision of emergency care for acute emotional disorders. The program appears, nevertheless, to be a workable one and has enlisted the combined efforts of many national and state organizations.

The Dependents' Medical Care Program is designed to provide improved and uniform medical care for dependents of members of the uniformed services and thereby enhance the morale of service personnel. The program continues the provision for medical care in uniform service facilities for authorized dependents of both active duty and retired personnel; parents or parents-in-law (if dependent and provided the parent or parent-in-law actually resides in a household provided or maintained by the member); and deceased members' dependents (if eligible). Unlimited outpatient care is provided in service facilities. In civilian facilities, however, the law extends essentially to hospital care only for wives and children or dependent husbands of members of the uniformed services on active duty for a period greater than 30 consecutive days. Outpatient care in the civilian program is strictly limited to maternity care and bodily injury. The term "uniformed services" applies not only to the Army, Navy, Marine Corps, and Air Force but also to the Coast Guard and to commissioned members of the Public Health Service and Coast and Geodetic Survey.

Only a slight change can be noted in the medical care rendered in service facilities from that which has been traditionally available. Medical care available in civilian facilities, however, is an entirely new development, and it is this part of the program that I wish specifically to discuss.

Executive Director, Office for Dependents' Medical Care, Office of the Surgeon General, U. S. Army, Washington, D. C.

Read before the Section on Military Medicine at the 106th Annual Meeting of the American Medical Association, New York, June 5, 1957.

The law designates the Secretary of Defense to administer the program and to prepare a directive in conjunction with the Secretary of Health, Education, and Welfare. The Secretary of Defense delegated his authority for operation of the program to the Secretary of the Army who redelegated this authority through the Army staff to the surgeon general of the Army. Inasmuch as this was an entirely new and somewhat foreign function to that performed within his office, and because it concerned medical care for dependents of members of the other six services, the surgeon general established an almost autonomous Office for Dependents' Medical Care, headed by an executive director.

The law was signed by the President on June 7, 1956, to be effective on Dec. 7, 1956. An interagency committee, under the supervision of the Assistant Secretary of Defense (health and medical), was established to prepare implementing instructions, definitions, delineations, extensions, restrictions, and procedures considered necessary to administer the program. This committee sought and utilized the advice of civilian representatives, notably those of national organizations (American Medical Association, American Hospital Association, Blue Cross Commission, Blue Shield Commission, and the insurance industry). The deliberations of this committee were incorporated in a document entitled "Joint Directive for Implementation of the Dependents' Medical Care Act" which was officially signed on Oct. 18, 1956, by the Secretary of Defense and the Secretary of Health, Education, and Welfare. This directive is the basis of all actions for administering the program.

The program was placed in operation on the effective date (Dec. 7) in the 48 states, Alaska, Hawaii, Puerto Rico, and the District of Columbia. Contracts were in force, with the Blue Cross Commission and the Mutual Benefit, Health and Accident Association of Omaha acting as fiscal administrators for hospitals within designated geographical areas. With a few exceptions, contracts were in effect in all states, Alaska, Hawaii, Puerto Rico, and the District of Columbia with the medical association of the area and/or a fiscal administrator for payment of physicians' claims. The medical associations as well as the Blue Shield organizations of Ohio and Rhode Island, for reasons of their own, decided not to participate in the program. Neither state, however, objected to the government making arrangements for a fiscal administrator to handle claims by physicians participating in the program. Contractual arrangements were made with Mutual Benefit, Health and Accident Association of Omaha to pay physicians in both of these states. Alabama, Hawaii, and Idaho, for various reasons, had difficulty in arranging for a fiscal administrator to meet government standards. Medical associations of these states readily entered into contractual arrangements, and questions concerning the fiscal administrator were expeditiously resolved. In Maine, the inability of the local Blue Shield organization to enter into contractual arrangements had to be resolved by action of the Maine legislature. In the meantime, the program was fully in effect in these six states, and physicians' claims were promptly paid by the commanding generals of the Army area under whose jurisdiction the state or territory was located. The Army commands are experienced in this field because for many years they have handled physicians' and hospitals' claims for army active-duty personnel who became injured or ill away from their stations.

Financial Aspects of Program

During the implementation of the program, it was considered necessary and appropriate that physicians' fee schedules be developed. The interagency committee prepared from the California schedule a list of items applicable to the program and forwarded a blank schedule to the various state medical associations with a request that a maximum fee (based on the medical practice within the state) be developed for each item which would represent the charge to an individual with an income of approximately $4,500 per year. More than 80% of the members of the uniformed services earn less than this amount. It was intended that physicians charge their usual fees and not exceed in any instance the maximum schedule unless a special report of unusual circumstances was made. This schedule was to be negotiated with representatives of the government at a later date. This negotiation was accomplished in late October and November, 1956, in the Office for Dependents' Medical Care by teams comprised of a physician, a certified contracting officer, a lawyer, and an auditor. The teams met with representatives of the states and territories and carefully reviewed each item to assure that consideration had been given by the committees within the states to the criteria which had been furnished. The state medical associations were given the right to submit separate schedules for different areas within their jurisdiction; however, none did so. No attempt was made to standardize the fees nor were comparisons of states' submissions made during the entire negotiation period. The negotiated schedules had wide and unexplainable variations. The nomenclature of the items contained in the fee schedule did not mean the same to all concerned. How much service was included for the fee was a difficult problem, particularly in orthopedic categories. There were and still are many problems in connection with the fee schedules.

The program has been in effect more than six months. Statistics available are incomplete because of necessary ~~and customary~~ delays in billings and transmissions. Some facts have been compiled from claims submitted to date, and while this information in many cases represents small samples they indicate a trend of the program.

Data compiled from 21,363 cases indicating type of care (principal procedure or operation) revealed that medical and pediatric visits comprised 23.3%; maternity care cases, 47%; tonsillectomies, 11.6%; genitourinary disorders, 6.7%; abdominal operations, 3.8%; injuries, 2%; tumors, 1.9%; and others, 3.7%.

The volume of business data was compiled as of May 22, 1957. There were 64,721 hospital claims at total cost to government of $6,542,407. The average cost of hospital claims was $101.40. There were 310,660 hospital days listed at total cost to government of $21.06. (Patients paid approximately $1,682,746 additionally.) There were 73,689 physicians' claims at total cost to government of $5,048,000. The average cost of physicians' claims was $68.50. A sample calculation of per diem and per case costs to government was cost of patient day (hospital and physician), $50; cost per case (hospital and physician), $250.

Twenty per cent of the participants in the program were males, and the majority of these were children. Eighty per cent of the participants were females. Twelve per cent were under 1 year of age; 22% from 1 to 13 years; 14% from 14 to 19; 38% from 20 to 29; 12% from 30 to 39; and 2% over 40. Forty-two per cent resided apart from their sponsors because of the exigencies of service.

In service distribution, dependents of Army personnel comprised 24.6%; of Navy and Marine Corps personnel, 30.8%; of Air Force personnel, 42.5%; and of Public Health Service personnel, including Coast Guard and Coast and Geodetic Survey, 2.1%

Problems in Administration of Program

Since the inception of the program, there have been literally thousands of questions in the indefinite areas. In maternity care alone there were many questions concerning charges which arose as a result of the various developments, changes, and occurrences during the management of the period of pregnancy. These questions have been met with the best knowledge available and, in general, the program is operating on principles which have been rather universally accepted.

Emergency care of acute emotional disorders (care of nervous and mental diseases is specifically prohibited by the law) has been a difficult problem. In general, the program now allows up to 21 days' care in such emergencies with reasonable extensions if additional time is required to (1) reach a responsible sponsor, (2) obtain acceptance in a state institution, (3) complete short-term treatment if cure or remission will allow return home, and (4) determine by diagnosis if long-term care is needed. Treatment of tuberculosis is allowable under the program if the case is contagious, acute, or amenable to surgery. Medical care in a hospital for chronic diseases is permissible if an acute exacerbation occurs or if the physician believes certain treatment will contribute to the life, health, or well-being of a patient. Likewise, elective surgery which the physician considers indicated and is not desired by a patient solely for cosmetic or other reasons is considered to be a proper charge to the government under the program. Great dependence is thus placed on the physician's judgment.

In the operation of this program, it is imperative that the Army, Navy, Air Force, and Public Health Service be kept fully informed and, in fact, conjointly make many of the decisions. A liaison committee has existed since the operation of the program. A formal meeting is held once each month and daily contacts are made concerning problem cases. It is also necessary that the A. M. A., A. H. A., and American Dental Association be thoroughly informed concerning the program and that these organizations participate in many decisions. The Medical Care Committee of the A. M. A. periodically meets with representatives of the Office for Dependents' Medical Care. At these meetings, consideration is given to the broad problems which have arisen. A permanent contact has been selected in the Washington office of the A. M. A. in order that daily problems which might affect the profession can be discussed. The A. H. A. also has a committee which meets periodically with the Office for Dependents' Medical Care on problems affecting hospitals of the nation. Almost daily communication is maintained with its Washington office.

Many meetings and discussions as well as detailed studies have been conducted with the dental profession since the inception of the program because the problem of adjunctive dental care has been one of the most difficult. Very close contact, of course, is maintained at all times with the Blue Cross and Blue Shield commissions and with the various insurance companies which are contractors under the program.

The Dependents' Medical Care Program is not completely subsidized by the government. A patient has certain monetary responsibilities, and the government assumes the remainder. A physician may charge the government more than the scheduled fee if he can reasonably justify the additional charge. However, he cannot charge the patient more than the amount stipulated in the law or directive. The program, except for the Office for Dependents' Medical Care, is operated by civilian agencies whose civilian function is to operate similar programs. There has been generally good acceptance of the program by physicians, hospitals, and medical and hospital organizations. While the law provides for the restriction of the right of dependents to use civilian physicians and facilities in any area, no such restriction has been made or even proposed. The eligible dependent (wife, children, and dependent husband of active-duty members) has free choice between uniformed service and civilian facilities.

There are evidences of benefit to morale within the services which, at this early date, can be based only on chance remarks. Information concerning the program is reasonably well disseminated. On the whole, the program now appears to be a workable one which fits well within the framework of our democratic ideals. And whatever success it may now claim is due to the combined efforts of the national and state medical and hospital associations, the various insurance plans, both profit and nonprofit, and the support and participation of the physicians and hospitals of the nation. It is hoped that the program's future will be such that it can serve a most useful and needed service for our country both in time of peace and during any mobilization.

BENZATHINE PENICILLIN G IN THE PREVENTION OF STREPTOCOCCIC INFECTIONS

Capt. Alton J. Morris (MC), U. S. A. F.
and
Charles H. Rammelkamp Jr., M.D., Cleveland

The effectiveness of benzathine penicillin G in preventing streptococcic pharyngitis was determined during an epidemic of this disease among military personnel at an air force base. A single intramuscular injection was given to each of 741 men, representing about 10% of the exposed population. Three dosage levels were tried, and all were equally effective in eliminating group A streptococci from the throat in carriers, while men who had received a placebo injection continued to harbor the organisms. The duration of protection, however, varied with the dosage. The first streptococcic infections began to occur as early as the 8th day after injection in 240 men who had received 300,000 units, while in 246 men who had received 1,200,000 units the first illnesses were observed on the 44th day. It appeared that 1,200,000 units of benzathine penicillin G protected the individual for approximately six weeks.

Benzathine penicillin G is employed for the prevention of streptococcic infections in rheumatic patients. For this purpose it is recommended that 1,200,000 units be given by intramuscular injection at monthly intervals.[1] Although this prophylactic regimen appears to be adequate for the prevention of streptococcic infections and recurrences of rheumatic fever,[2] there is little information concerning the duration of protection afforded by this and other doses of benzathine penicillin G. Since the incidence of reactions to benzathine penicillin G is related to the amount injected,[3] further information concerning the duration of protection afforded by various amounts of benzathine penicillin G is required. The present report describes the results of such a study and, in addition, presents data on the effectiveness of a single injection of benzathine penicillin G on the elimination of group A streptococci from the tissues of the oropharynx and tonsils.

Methods and Results

Oropharyngeal cultures were streaked on 5% sheep blood agar, and after 18 hours incubation colonies exhibiting beta hemolysis were isolated. Serologic identification of these isolates was performed by standard techniques.[4]

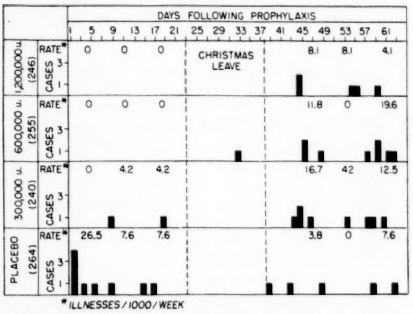
In November, 1954, the school area at Warren Air Force Base, Wyoming, became involved in a rapidly increasing epidemic of streptococcic pharyngitis. When the hospital admission rates for streptococcic infections reached 16 per 1,000 per week, benzathine penicillin G was administered as prophylaxis to approximately 25% of the airmen in each of six student squadrons. The number of men who received prophylaxis totaled only 10% of the entire student population. By administering the drug to such a small fraction of the personnel, it was believed that the epidemic would be relatively unaffected so that when the period of protection had passed those men who had received prophylaxis would soon acquire infections.

To determine the duration of protection afforded by benzathine penicillin G against streptococcic infection, three different doses were employed. As

From the Streptococcal Disease Laboratory, Francis E. Warren Air Force Base, Wyoming, and the departments of preventive medicine and medicine, Western Reserve University School of Medicine.

shown in the figure, each group receiving penicillin was composed of approximately 250 airmen, whereas saline solution was administered to 264 men who served as controls. During the subsequent nine weeks, all airmen reporting to sick call with fever and respiratory symptoms or showing exudative tonsillitis or pharyngitis were admitted to the hospital. Oropharyngeal cultures were obtained from each patient. In the figure the time of occurrence of each illness characterized by exudative tonsillitis or pharyngitis and a positive culture for group A streptococci is indicated.

During the first week after the administration of prophylaxis no streptococcic illnesses as defined above were observed in the three groups receiving penicillin, whereas the weekly rate for the control group was 26.5. During the second and third weeks two infections were observed among the men receiving 300,000 units, but none developed in the men receiving larger amounts of penicillin. Since between the 22nd and 38th day after prophylaxis



Comparative effect of various amounts of benzathine penicillin G in prevention of streptococcic infections.

most of the men were not on duty, the data concerning the number of infections during this period are not reliable. One illness did develop among the men receiving 600,000 units. After the return of the population after Christmas vacation, illnesses occurred in all four study groups. The first illnesses in the group which received 1,200,000 units developed on the 44th day after injection.

Table 1 shows the results of cultures of the oropharynx obtained just prior to prophylaxis and two, six, seven, and nine weeks later. Group A streptococci were isolated from 13 to 22% of each group prior to prophylaxis. At each subsequent survey there was little change in the carrier rate of the control group. In contrast, at two weeks no positive cultures were obtained in the groups receiving 1,200,000 or 600,000 units. There was also a tenfold reduction in the carrier rate in the group receiving 300,000 units. At the time of the sixth-week survey, a few positive cultures were recorded from the two groups receiving the largest amounts of penicillin. At the ninth week the carrier rates were approaching the levels observed prior to prophylaxis, but they were still considerably lower than that observed in the control group.

Since the carrier rate at any of the follow-up examinations was composed of both chronic carriers and individuals who had recently acquired a new organism, it is difficult to interpret the results of

TABLE 1.—*Carrier Rates for Group A Streptococci Before and After Various Amounts of Benzathine Penicillin G*

Prophylaxis Units	Men, No.	% of Each Group from Which Group A Streptococci Isolated Prior to Prophylaxis	% of Each Group from Which Group A Streptococci Isolated, Weeks After Prophylaxis			
			2nd	6th	7th	9th
1,200,000	246	13	0	2	5	8
600,000	255	14	0	2	3	9
300,000	240	20	2	6	8	10
Placebo	264	22	19	23	24	22

these culture surveys. In table 2 are presented the results of all cultures obtained during the nine-week period of observation in those individuals who harbored a group A Streptococcus initially and whose organism was successfully typed serologically. In this selected group it is possible to determine the effect of prophylaxis on elimination of the organisms and, in addition, to ascertain the approximate degree that the chronic carrier contributes to the observed carrier rates.

All three doses of benzathine penicillin G appeared to be equally effective in the elimination of group A Streptococci from the throat. In from 86 to 93% of the carriers in each of the three select-

TABLE 2.—*Effect of Benzathine Penicillin G on Group A Streptococcic Carriers* During Nine Weeks After Administration*

Prophylaxis, Units	Carriers, No.	Culture After Prophylaxis			
		Negative	Positive		
			Same Type	New Type	Not Typable
1,200,000	22	19	2	1	0
600,000	28	26	0	0	2
300,000	33	30	3	0	0
Placebo	50	10	31	5	4

* Includes only those individuals whose group A streptococci isolated before prophylaxis could be classified according to serologic type.

ed treatment groups no positive cultures were obtained during the follow-up period. Only one new acquisition was definitely identified from the penicillin groups. Failure to eliminate the infecting type of Streptococcus occurred in only five individuals, two in the group receiving the largest dose of penicillin and three in the group receiving 300,000 units. The two individuals in the group receiving 600,000 units whose cultures showed an organism which could not be typed may represent failure to eliminate the Streptococcus, since other studies have demonstrated that as the carrier state progresses, most streptococci become nontypable.[5]

In contrast to the groups receiving penicillin, only 20% of the carriers in the control group failed to show group A streptococci during the follow-up survey. From 70%, either the infecting type or a nontypable organism was isolated, and in 10% a new type was identified. This latter group of five individuals may represent patients with new infections. Only one such isolation was made in the 83 patients who received penicillin.

Comment

The data obtained in the present study showed that after the administration of 300,000 units of benzathine penicillin G, streptococcic infections began to occur as early as the eighth day, whereas after 600,000 and 1,200,000 units the first illnesses were observed on the 32nd and 44th days respectively. Since many in the four experimental groups were on leave during the fourth and fifth weeks, it cannot be concluded that complete protection was afforded throughout this period. In order to gather further information, data collected on all individuals who had received benzathine penicillin G at Warren Air Force Base, Wyoming, over a period of several years were analyzed. This included a previously reported mass prophylaxis survey [5] and a more recent prophylaxis study by Davis and Schmidt.[6]

In addition, benzathine penicillin G had been administered to a large number of patients with streptococcic infections who were subsequently observed for signs of a new infection.[7] These collected data are summarized in table 3. A total of 935 individuals have been given 1,200,000 units of benzathine penicillin G, and in this group the earliest time clinical illness was recognized was 44 days later. After the administration of 600,000 units, the earliest infections developed 26 days after infection, whereas with 300,000 units there was little protection after the eighth day. In these studies the benzathine penicillin G employed belonged to a single lot number. Several years later, employing a new lot of penicillin, Davis and Schmidt [6] administered 900,000 units to 2,214 men during an epidemic. In this instance, the earliest streptococcic illness occurred on the 15th day, but there appeared to be a high degree of protection for at least three weeks. Assays of the potency of several samples of this lot failed to reveal any appreciable deterioration. Samples of the penicillin used in the present study were not available for analysis.

From the present study it appears that 1,200,000 units of penicillin protected the individual for approximately six weeks. Since 900,000 units in the study by Davis and Schmidt [6] did not confer complete protection for four or five weeks, it is obvious that additional data are required before precise recommendations can be made for the management of patients who have rheumatic heart disease or who have experienced an attack of rheumatic fever. Further studies on the duration of protection against streptococcic infections provided by 1,200,000 units of benzathine penicillin G are justified, since in the management of patients with rheumatic fever an injection every six weeks would hold distinct advantage over an injection once a month. Judging from illnesses developing after administration of 1,200,000 units of penicillin, it appears that such prophylaxis affords considerable protection for at least six weeks. In the protection of rheumatic patients, however, inapparent infections may play an important role in the development of recurrences, and considerable more bacteriological, immunological, and clinical data are required for final conclusions in relation to prophylaxis in patients with rheumatic fever.

Benzathine penicillin G has also been employed for the control of epidemics of streptococcic infections among military personnel and in the treatment of streptococcic infections.[8] In both of these instances the eradication of the organism is a most important feature of therapy. In this regard, it is interesting to recall that there were no discernible differences between the three dosage regimens employed, all being about 90% effective. Why penicillin fails to eliminate the organism in some patients or carriers is not known. The importance of these persistent carriers in the initiation of new outbreaks is unknown; but in patients with streptococcic infections, failure to eliminate the Streptococcus results in attack rates of rheumatic fever comparable to those observed in untreated patients.[7]

TABLE 3.—*Summary of Experience at Warren Air Force Base, Wyoming, with Benzathine Penicillin G as Prophylaxis Against Streptococcic Infections*

Benzathine Penicillin G, Units	Men, No.	No. Developing Illness During Weeks After Injection						
		1st	2nd	3rd	4th	5th	6th	7th
1,200,000	935	0	0	0	0	0	0	4
600,000	874	0	0	0	1	1	1	3
300,000	240	0	1	1	..	..	..	4
None	562	9	5	3	1	1	3	2
900,000[a]	2,214	0	0	3	5	11	17	..
None[a]	483	14	5	8	1	2	2	..

[a] Data from Davis and Schmidt.[6]

Summary

Benzathine penicillin G was administered as a single intramuscular injection in doses of 1,200,000, 600,000, and 300,000 units to 246, 255, and 240 men, respectively, during an epidemic of streptococcic pharyngitis in a military population. The duration of protection provided by each dose as determined by the development of exudative pharyngitis due to group A streptococci was six to seven weeks, four to five weeks, and one to two weeks respectively. All three dosage regimens were equally effective in eradicating streptococci from carriers. The data indicate that benzathine penicillin G is a valuable agent in the control of streptococcic disease.

This investigation was conducted under the sponsorship of the Commission on Streptococcal Diseases, Armed Forces Epidemiological Board, and was supported by the offices of the Surgeons General, departments of the Army and Air Force, Washington, D. C.

The benzathine penicillin G used in this study was supplied as Bicillin through Dr. Edward F. Roberts, Wyeth Laboratories, Inc., Philadelphia.

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8. Footnotes 3, 6, and 7.

REACTIONS FROM MULTIPLE INJECTIONS OF BENZATHINE PENICILLIN G

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A comparison was made between two dosage plans for the intramuscular administration of benzathine penicillin G as prophylaxis against rheumatic fever, nephritis, and streptococcic infections in the armed forces. One group of 1,567 men received 600,000 units every four weeks; the other group, of 1,708 men, received 900,000 units every six weeks. No reactions of the anaphylactoid type occurred, but during the six months of the study 16 men were hospitalized for urticaria, angioneurotic edema, or joint symptoms; 11 were hospitalized after the first injection, 4 after the second, and 1 after the third. Most (11) of these severer reactions occurred after the injection of 900,000 units, but the probability of reaction to subsequent doses decreased in both groups, and prolong the interval between injections did not affect the probability of a reaction. Because few streptococcic infections were seen, this study did not test the effectiveness of the prophylaxis, but it did demonstrate the safety and feasibility of administering benzathine penicillin G in this way.

The increasing number of reactions to penicillin that are being reported has focused attention on the possibility that large segments of the population may be sensitized to this antibiotic by repeated injections. This problem is particularly important in the use of penicillin for the control of streptococcic infections in patients who have had rheumatic fever and for the control of epidemics of streptococcic infections, rheumatic fever, and nephritis in the armed services. In recent years interest in penicillin preparations which are slowly absorbed from intramuscular deposits has increased. A relatively new depot preparation, benzathine penicillin G, may prove to be an ideal prophylactic agent. At present, information is meager concerning the duration of protection in relation to size of dose as well as incidence of reactions after various doses and repeated injections.

This study was designed to obtain further information concerning the prophylactic effect of repeated injections of benzathine penicillin G, in two different dosage schedules, on prevention of streptococcic disease and also on the incidence of sensi-

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tivity reactions occurring during such regimens. Since the incidence of streptococcic infections was too low for evaluation, this report will deal only with reactions.

Methods

Four Army battalions in one combat command, living in similar quarters and under nearly identical training conditions, were chosen to participate in this investigation, which lasted from Oct. 15, 1955, to April 15, 1956. These battalions were training at greater than authorized strength; therefore, additional personnel joining the organization were minimal. Two battalions totaling 1,567 men were placed on a regimen of 600,000 units of benzathine penicillin G (Bicillin) every four weeks for a total of six injections, and two battalions of 1,708 men were placed on a regimen of 900,000 units every six weeks for a total of four injections. These doses and time intervals were selected because preliminary studies showed that 600,000 units of benzathine penicillin G protected against streptococcic infections for three to four weeks and 900,000 units for somewhat longer periods.[1] Larger doses (1,200,000 units) were omitted because of the high incidence of reactions after one injection.[2]

Personnel who were not available for the first injection periods were added to the recipient group as late as the fourth period in the 600,000-unit group and third period in the 900,000-unit group. This procedure allowed a larger number of personnel to participate but decreased the percentage of participants completing the full series of injections. Penicillin was administered intramuscularly in the upper outer quadrant of the buttocks, in alternate sides at each injection.

Before the first injections were given, the purpose of the study was explained to the men, and they were encouraged to report previous reactions to penicillin. Those who stated that they had had previous reactions were individually interviewed. Men with definite histories of skin rashes or joint reactions were then removed from the study group. The soldiers receiving prophylaxis were directed to report on sick call should they develop any form of skin reaction or joint pain or swelling at any time. In addition, before each injection, all individuals were questioned regarding occurrence of reactions after the previous injection. All personnel with reactions were seen by one of two physicians who evaluated and described the condition on a reaction history form. Urticaria, angioneurotic edema, and joint pain and/or swelling were classified as probable benzathine penicillin G reactions; other skin rashes and systemic reactions (fever, headache, nausea, vomiting, and general malaise) were classified as possible reactions.

All men with probable or possible reactions were excluded from further participation in the study. In addition, those who had severe, painful, local reactions were removed from the study group for purposes of morale. Observations for reactions continued during the entire six-month period of this investigation. In order to prevent the men from receiving agents not administered as part of the investigation, all antibiotics and chemotherapeutic agents were removed from the dispensaries serving the study battalion on the day the study began.

Results

Table 1 shows the number of personnel available at each injection period in the 600,000-unit and 900,000-unit groups, respectively, and also the cumulative number of personnel removed because of a history of reactions to penicillin prior to this study and because of reactions to benzathine penicillin G during the study. The group remaining after the removal of the individuals with reactions was considered the group eligible for injections. Table 1 includes the number and percentage of those groups which actually received benzathine penicillin G at each of the injection periods. It can be seen that the participation was 92% at the first scheduled injection in October and at least as high as 75% at all later scheduled injections. The higher percentage of participants at the beginning was due primarily to starting the study at a time when the maximum number would be present. The lower percentage of participation at later periods was accounted for mainly by the absence of men from the post because of attendance at service schools, leave, or prolonged field duty.

The units selected for prophylaxis contained 3,275 men of whom 214, or 6.5%, gave a history of previous reaction to penicillin and were eliminated

TABLE 1.—*Number of Soldiers Eliminated from Study Because of Penicillin Reactions and Percentage of Personnel Receiving Injections at Each Period*

Scheduled Period of Injection	Total Population*	Cumulative Number Eliminated Because of Reactions			No. Eligible for Injections§	No. Receiving Injections	Eligibles Receiving Injections, %
		Pen†	BP‡	Total			
600,000 units every four weeks							
Oct. 14-17	1,567	43	0	43	1,524	1,386	91
Nov. 10-16	1,556	53	40	93	1,463	1,196	82
Dec. 8- 9	1,549	56	56	112	1,437	1,148	80
Jan. 4-13	1,528	78	65	143	1,385	1,049	76
Jan. 31-Feb. 8	1,529	82	76	158	1,371	1,008	78
Feb. 29-March 1	1,490	82	78	160	1,330	1,104	83
Total		82	83	165			
900,000 units every six weeks							
Oct. 14-18	1,708	75	0	75	1,633	1,508	92
Nov. 28-29	1,712	100	62	162	1,550	1,197	77
Jan. 4- 9	1,701	127	79	206	1,495	1,128	75
Feb. 7-15	1,659	132	83	215	1,444	1,178	82
Total		132	88	220			

* Slight fluctuations in total numbers were due to transfers in and out of study units.

† History of penicillin reaction previous to present study; increase in numbers was due to new additions to study at each period of injection.

‡ Benzathine penicillin G reaction during this study.

§ Number eligible for injections is total population minus all individuals with penicillin reactions.

from the study. Included among the 214 men were 170 who were excused from the initial injection and 44 who reacted after their first injections and then recalled a penicillin reaction at some previous date. Data on none of these 214 individuals are included in the benzathine penicillin G reaction tables.

Table 2 shows the cumulative probability of reactions after multiple injections of benzathine penicillin G. In this table the reactions are classified as

TABLE 2.—*Cumulative Probability of Reactions After Multiple Injections of Benzathine Penicillin G*

No. of Injections Received	No. Receiving Injections	Reactions* Probable	Reactions* Possible	Reactions* Total	Probability of Not Reacting†	Cumulative Probability of Not Reacting‡	Probability of Reacting§	Cumulative Probability of Reacting‖
600,000 units every 4 weeks								
1	1,533	38	10	48	0.969	0.969	0.031	0.031
2	1,421	11	5	16	0.989	0.958	0.011	0.042
3	1,295	4	1	5	0.996	0.954	0.004	0.046
4	1,168	9	0	9	0.992	0.946	0.008	0.054
5	974	3	0	3	0.997	0.943	0.003	0.057
6	560	2	0	2	0.996	0.939	0.004	0.061
900,000 units every 6 weeks								
1	1,646	48	17	65	0.961	0.961	0.039	0.039
2	1,431	14	3	17	0.988	0.949	0.012	0.051
3	1,169	2	0	2	0.998	0.947	0.002	0.053
4	765	4	0	4	0.995	0.942	0.005	0.058

* Probable reactions were urticaria, angioneurotic edema, and joint pain and or swelling. Possible reactions were other skin rashes and systemic reactions (fever, headache, nausea, vomiting, and general malaise).

† Probability of not reacting = number receiving injections without reacting ÷ total number receiving injections.

‡ Cumulative probability of not reacting = cumulative probability of not reacting after one injection × probability of not reacting after next injection. (Example: 0.969 × 0.989 = 0.958.)

§ Probability of reacting = 1.000 — probability of not reacting.

‖ Cumulative probability of reacting = 1.000 — cumulative probability of not reacting.

probable or possible; 79% were considered probable and 21% possible. In the remainder of the paper the rates cited will include both classifications. It was found that the probability of reacting to the first injection was much greater than that of reacting to later injections. The same was true in both dosage schedules. In the 600,000-unit group, the probability of reacting to the first injection was 0.031, or 3.1%, and to the second was 0.011, or 1.1%. In the 900,000-unit group, the probability of reacting to the first injection was 0.039, or 3.9%, and to the second was 0.012, or 1.2%. In both groups, after the first two injections, the probability of reacting was slightly lower and remained relatively constant for the remainder of the injections. The cumulative probability of reacting to repeated injections of benzathine penicillin G was found to be 0.061 after six injections of 600,000 units and 0.058 after four injections of 900,000 units.

There were few complaints of pain at the injection site and only five individuals were removed from the study because of moderately severe local reactions manifested by pain, swelling, and redness. No abscesses occurred and no one was hospitalized because of local reaction. These few local reactions are not included in the reaction statistics.

In general, the systemic reactions were mild. No reactions of the anaphylactoid type occurred. During the study period 16 individuals were hospitalized for urticaria, angioneurotic edema, or joint symptoms; 5 were from the group receiving injections of 600,000 units, and 11 were from the group receiving injections of 900,000 units. Eleven were hospitalized after the first injection, 4 after the second, and 1 after the third. All patients were treated with orally given tripelennemine (Pyribenzamine) citrate. In addition, one patient was given one injection of aqueous epinephrine and corticotropin (ACTH) for urticaria 14 days after he had received benzathine penicillin G. A second patient was given one injection of aqueous epinephrine and cortisone for one day for urticaria and joint swelling. Usually all symptoms and signs disappeared within two or three days after the start of treatment; however, one patient was hospitalized for 40 days because of recurring urticaria.

The interval between the time of injection and onset of reaction was not appreciably different in the two dosage schedules; therefore, the two will be considered together. Sixty-eight per cent occurred during the first week and 88% by the end of

TABLE 3.—*Effect of Prolonging Interval Between Injections on Reaction Rates in Soldiers Receiving Benzathine Penicillin G on Two Dosage Schedules*

No. of Injections Received	Distribution of Injections*	No. of Men Receiving at Least Specified No. of Injections†	Reactors No.	Reactors %
600,000 units every four weeks				
1	Uninterrupted	1,533	48	3.1
2	Uninterrupted	1,246	14	1.1
	Interrupted	175	2	1.1
3	Uninterrupted	997	4	0.4
	Interrupted	298	1	0.3
4	Uninterrupted	785	7	0.9
	Interrupted	383	2	0.5
5	Uninterrupted	650	1	0.2
	Interrupted	324	2	0.6
6	Uninterrupted	560	2	0.4
900,000 units every six weeks				
1	Uninterrupted	1,646	65	3.9
2	Uninterrupted	1,195	16	1.3
	Interrupted	236	1	0.4
3	Uninterrupted	905	1	0.1
	Interrupted	264	1	0.4
4	Uninterrupted	765	4	0.5

* Uninterrupted means the indicated number of injections was given at the defined intervals; interrupted means that the benzathine penicillin G was given with one or more additional intervals between injections.

† Individuals classified as having received at least a specified number of injections may or may not have received more; those that did are included later in the table also.

the second week. A few reactions attributed to benzathine penicillin G became apparent as late as eight weeks after the injections.

The effect of prolonging the interval between injections in both dosage schedules is demonstrated in table 3. Here the percentage of those who reacted after injections given without interruption is compared with the percentage of those who reacted after the administration of benzathine penicillin G with one or more additional intervals between in-

jections. It can be seen that, in this study, the percentage of those reacting did not increase when the time between injections was increased.

Comment

Injectable benzathine penicillin G has been shown to be effective in the eradication of the group A Streptococcus from the throat and in the prevention of streptococcic infections and their complications, rheumatic fever and nephritis.[3] This drug has the advantage of being so slowly absorbed that single doses of 600,000 units or more will produce blood levels effective for the prophylaxis of streptococcic infections for two to four weeks.[1] Such an agent should be ideal for use in the control of streptococcic infections in military units or in patients with rheumatic fever, but the possibility of encountering serious sensitivity reactions, particularly if injections are repeated in the same individual, has led to caution in its widespread use. In the study here described, 11,962 intramuscular injections of benzathine penicillin G, either 600,000 or 900,000 units, were given to 3,179 Army personnel without the occurrence of a single fatal or anaphylactoid reaction. Thirty-seven per cent of those in the 600,000-unit group received all six injections and 46% of those in the 900,000-unit group received all four injections. The reaction rates did not differ significantly in the groups receiving either 600,000 or 900,000 units.

When those with reactions after each injection were excluded from the study, the probability of reacting decreased markedly after the first injection and remained low for the remainder of the injections. It is possible that the reactions after the later injections represent sensitization induced by previous injections, but the numbers were small and did not constitute a problem in this study. The longest interval between injections was four and one-half months, and prolonging the interval to this extent did not change the reaction rates. If it can be assumed that the men who gave a history of previous penicillin reactions were sensitive to benzathine penicillin G, then the data in this study indicate that most individuals (85%) sensitive to the drug can be identified by an adequate history and reactions after an initial injection.

Reported reaction rates after injections of benzathine penicillin G vary greatly. Brooks and Moe,[4] in a study of naval recruits, and Smith and his coworkers,[5] in a study in venereal disease clinics, report reaction rates of less than 1% after a single injection; on the other hand, Chamovitz and others[3c] reported a reaction rate of 5.1% in young airmen after one injection. Stollerman, Rusoff, and Hirschfeld,[6] in a study in young persons with rheumatic disease who received an average of 12 injections per patient, reported that 3.2% of patients suffered reactions. The reaction rates of approximately 3.5% after one injection and approximately 6% after four or six injections in the present report, therefore, appear high. The cause for this discrepancy is unknown. It is possible that some of the increase can be explained by the inclusion of minor or insignificant reactions or the greater likelihood of detecting reactions in the particular group in this study. It is also possible that the incidence of penicillin reactions may be higher in adults, as reported here, when compared with the lower incidence in children, as reported by Stollerman and his group.

This study was originally designed to study the efficacy of benzathine penicillin G as a prophylactic agent against streptococcic infections. The incidence of these infections was too low for evaluation; therefore, these data are not included in this report. It is of interest, however, that the incidence of gonorrheal infections was markedly reduced in the treated group; one of the 3,275 men who received benzathine penicillin G developed gonorrhea, while 192 of 13,000 untreated men in the same Army division developed this disease.

Since, in this study, most individuals sensitive to benzathine penicillin G could be detected by a history of a previous reaction to penicillin or a reaction to an initial injection, reactions, in general, were not serious, and rates did not change when the intervals between injections were prolonged, it seems proper to conclude that the routine use of repeated injections of this drug as a prophylactic agent in large groups is not only feasible but safe.

Summary

The rates and severity of reactions after repeated intramuscular injections of benzathine penicillin G were studied in four Army battalions. Two dosage regimens were used, 600,000 units every four weeks (1,567 men) and 900,000 units every six weeks (1,708 men). No fatal or anaphylactoid reactions were encountered. The cumulative probability of reacting was almost identical, 0.061 (6.1%) in the 600,000-unit group and 0.058 (5.8%) in the 900,000-unit group. When those with reactions were excluded the probability of reaction decreased markedly in both groups after the first injection, and prolonging the interval between injections did not change the reaction rates. It was concluded that the use of repeated intramuscular injections of benzathine penicillin G was a feasible and safe procedure.

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This investigation was conducted under the sponsorship of the Research and Development Division, Office of the Surgeon General, Department of the Army, Washington, D. C., and the Commission on Streptococcal Diseases of the Armed Forces Epidemiological Board.

Dr. Charles H. Rammelkamp Jr. and Col. Kenneth A. Brewer assisted in planning this study, and Dr. Arthur S. Littell did the statistical analyses.

The benzathine penicillin G (Bicillin) used in this study was supplied through Dr. Edward F. Roberts of Wyeth Laboratories, Philadelphia.

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TREATMENT OF MYASTHENIA GRAVIS

PROLONGED ACTION WITH MULTIPLE-DOSE TABLETS OF NEOSTIGMINE BROMIDE AND MESTINON BROMIDE

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The anticholinesterase drugs used in treating myasthenia gravis do not have a prolonged action. The ordinary dosage forms must be taken frequently during the day, and some patients have had to be awakened repeatedly during the sleeping period for medication. New dosage forms (slow-release tablets) have therefore been developed. Neostigmine bromide in the form of slow-release tablets was tried in 85 patients, 54 of whom continued to take this form by preference at the conclusion of the experiment. Mestinon bromide in the form of slow-release tablets was similarly tried in 109 patients, 82 of whom continued to take this form at the conclusion of the experiment. The average duration of action of the slow-release Mestinon tablet was approximately six hours. There were many individual differences in the responses to these dosage-forms, and some patients preferred to take the slow-release tablets only at bedtime. Their greatest value was in eliminating the need of frequent interruptions of sleep.

The most important advance in the treatment of myasthenia gravis undoubtedly was the discovery by Dr. Mary Walker [1] in 1934 that neostigmine injections temporarily overcame the symptoms. Certainly the next step was the introduction by Everts [2] in 1935 of 15-mg. neostigmine tablets to be given orally. Both the injection and the tablet last effectively only one to three hours. In severe cases, therefore, frequent dosage is mandatory, such as every two hours day and night. This means inconvenience during the waking hours and extreme interruptions of sleep, or dangerous exacerbations of symptoms if the patient sleeps through. Prolonging the parenteral effect by the use of oil was tried in 1939 by one of us (R. S. S.),[3] but the absorption was so uncertain in every instance that either serious overdosage or the reverse occurred. The death of one patient in a cholinergic crisis while on maintenance therapy with the oil preparation caused complete abandonment of this technique of administration.

Mestinon bromide, an analogue of neostigmine which is the dimethylcarbamate of 3-hydroxy-1-methylpyridinium bromide, was made available for the treatment of myasthenia gravis in 1953. It is now available in scored 60-mg. tablets, each of which is roughly equivalent to 15 mg. of neostig-

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mine bromide. Mestinon has less gastrointestinal side-effects than neostigmine and in some patients has a longer action. Many patients, however, must take frequent doses during the day, and some must be awakened for doses during the sleeping period.

In recent years new dosage forms of various drugs have been constructed to permit slow release. Since a patient with myasthenia gravis requires frequent doses during the daytime hours, it was suggested to the manufacturers that some form of prolonged-action tablet be prepared. Two sizes of neostigmine bromide and Mestinon bromide tablets were made available to us. In the case of neostigmine, the equivalent of three regular 15-mg. tablets, or a total dose of 45 mg., was contained in the full-strength tablet. (This tablet should not be confused with an enteric-coated or delayed-action type that passes through the stomach, its coating insoluble in the acid medium. Such tablets lose the protection coat in the alkaline small intestine, releasing the constituents as rapidly as an ordinary compressed tablet in the stomach. Their main function is to avoid contact of the contents with the most sensitive gastric mucosa, as in the case of some patients with aspirin. They may also, if the coating is thick enough, delay final dissolution, so that the absorption comes later than that of an ordinary capsule or tablet. In 1938 one of us [R. S. S.] [3] tried enteric-coated neostigmine without any advantage over the usual tablet.) The other tablet of neostigmine was half-strength, containing three doses of 7.5 mg. each or a total dose of 22.5 mg. In the case of Mestinon bromide, there was a full-strength tablet, containing three regular doses of 60 mg. or a total of 180 mg., and a half-strength tablet, containing three doses of 30 mg. or a total dose of 90 mg.

TABLE 1.—*Results with Prolonged-Action Neostigmine Bromide Tablets in Eighty-Five Patients*

Clinic	Max. per Day	Min. per Day	Av. per Day	Better than Reg. Med.	Equal	Not So Good	Over-dosage	Total Patients
Boston	12	1	3	23	3	8	3	34
Indianapolis ..	26	1	8	19	6	7	4	33
New York	16	1	5	12	2	4	2	18
Total	26	1	5	54	11	19	9	85

The information we desired to obtain was whether such tablets could provide effective control of myasthenic symptoms over extended periods of time, such as during the entire sleeping hours at night, whether in a given patient they were effective day after day, and whether the total contents approximated the equivalent amounts of drug taken in ordinary tablets. We also sought data as to whether such forms gave smoother absorption than repeated regular doses and whether overdosages or undermedication were complicating factors.

Patients were fully instructed as to the nature of the tablets and their purpose, including the obvious fact that such tablets could not be cut in two. The first trial was to substitute in equivalent amounts the prolonged-action or slow-release tablets for regular ones so as to see in each case how long the effective control lasted. The use of these tablets before retiring at night to avoid the need of waking for a dose of medicine was considered their most important value.

Results

Prolonged Action with Neostigmine Bromide.—In the three clinics in 1956 we administered the slow-release tablets of neostigmine bromide to a total of 85 patients (34 at Massachusetts General Hospital, Boston, 18 at Mount Sinai Hospital, New York, and 33 at Indiana University Medical Center, Indianapolis). Of the 85 patients, 54 are still finding the tablets of such value that they wish to continue with this therapy—a favorable percentage of 65.

The duration of effectiveness of the three-dose type varied from a minimum of 3 hours to a maximum of 12 hours, with an average effectiveness of 6 to 7 hours. In some patients the total amount of drug taken in this manner exceeded that in regular tablets by 33% without evidence of overdosage or better control, suggesting that some of the drug in such cases may escape absorption. In three patients with symptoms of dysphagia, the increased size of the tablet bothered the patients to such an extent that administration was discontinued. In all others this was not a problem.

In some patients the half-strength tablet was adequate for bedtime dosage (the full-strength one causing diarrhea and cramps in the early morning). Other patients preferred regular tablets during the day to give greater flexibility and prolonged-action tablets during the night. In some the prolonged-action tablets worked effectively during the day but were no better than regular tablets, affording only the convenience of fewer doses as an advantage. A few patients felt that the benefit of smoother, more even absorption was sufficiently present so that they preferred to remain on the slow-release neostigmine therapy.

The composite details of the results of administering prolonged-action neostigmine bromide tablets to 85 patients are shown in table 1. In this group of patients, variability in absorption, once satisfactory dosage was established, did not occur. Severe toxic or accumulative effects were not encountered. In no patient was significant failure of absorption encountered (tablets were not passed per rectum).

Prolonged-Action with Mestinon Bromide.—One hundred nine patients, both private and clinic, at Mount Sinai and Massachusetts General hospitals and at Indiana University Medical Center, were transferred to therapy with prolonged-action Mestinon tablets. We were careful to choose 83 patients who had previously been controlled on regular Mestinon bromide tablets, since we did not wish to becloud the clinical results of the new dosage form

V 16
1957

by using patients who had previously shown a preference for neostigmine (Prostigmin) bromide or ambenonium (Mytelase) chloride. Twenty-six patients who had previously been taking Mestinon bromide in combination with other drugs were also transferred to therapy with long-acting Mestinon bromide; this therapy included the administration of prolonged-action Mestinon bromide tablets in combination with prolonged-action neostigmine bromide (10 patients), with regular neostigmine (6), with ambenonium and regular neostigmine (2), and with ambenonium (8).

The prolonged-action Mestinon bromide tablets were withdrawn in 22 of the 83 patients selected. Sixty-one patients are still on maintenance therapy with prolonged-action Mestinon. These patients have been followed for a minimum period of 1 month and a maximum period of 12 months. The administration of the prolonged-action Mestinon tablets was discontinued in the case of the 22 patients for the following reasons: 1. Ten patients experienced excessive stimulation of the intestinal tract, with other muscarinic side-reactions. These toxic reactions were identical with those of overmedication with regular Mestinon tablets. 2. Seven patients could find no advantage in the prolonged-action Mestinon tablets over the regular tablets. They had been content and well adjusted on the ordinary tablets. 3. Three patients needed odd dosages during the day, only obtainable by taking a portion of the scored tablet; i. e., they needed three-fourths or one and three-fourths or only one-fourth of the regular Mestinon tablet to be well regulated. These patients were not content with the dosage available at present in the prolonged-action tablet. 4. One patient found that the prolonged-action Mestinon tablet was too large for her to swallow and stated that she nearly choked several times on these tablets. She had a peculiar anxiety reaction to large tablets, which is part of her personality complex. 5. One patient, a 32-year-old woman at the New England Medical Center, Boston, was totally unable to absorb any medication from the prolonged-action Mestinon tablets, passing them with her stool unchanged, and they were, therefore, not effective. Subsequently her thymus was removed, and she went into a partial remission. Then she went through the same procedure a second time when prolonged-action Mestinon tablets were administered, these tablets remaining unabsorbed. Her condition can now be effectively regulated by the daily administration of 12 prolonged-action neostigmine tablets, each containing 45 mg.

In the manufacture of the prolonged-action Mestinon bromide tablet, the core is made of an inert material into which the Mestinon is absorbed. This core may appear in the feces, and the patient may fear that the medication has not been assimilated. Assays of these cores recovered from the feces reveal that most, if not all, of the Mestinon has been utilized.

A few patients were satisfied with the action of the regular Mestinon tablets during the daytime hours and preferred taking the prolonged-action tablets only at bedtime. Occasionally, because of the prolonged action, it is not possible to space proper dosages over the 24 hours of the day, so that one dose of regular Mestinon bromide may be required in the late afternoon or the early evening to fill in the hiatus between the awakening and the bedtime doses. Twenty of the 61 patients who are on maintenance therapy with Mestinon bromide use combinations of regular and prolonged-action tablets. Of the 10 patients who have been taking combinations of prolonged-action Mestinon and prolonged-action neostigmine, 7 have continued to do so. Five patients are taking the prolonged-action Mestinon with regular neostigmine, and two patients are taking prolonged-action Mestinon with ambenonium and regular neostigmine. Seven patients take prolonged-action Mestinon with ambenonium.

Dosage: Patients were transferred from therapy with regular Mestinon bromide by replacing full-strength regular tablets containing doses of 60 mg. each with a 180-mg. prolonged-action tablet. In the case of one-half regular Mestinon tablets, the 90-mg. prolonged-action tablet was substituted. At first the patients were observed for a number of hours, and ergograms were made before and after edrophonium (Tensilon) tests at hourly intervals. It was thus determined and borne out by clinical evaluation that the prolonged-action Mestinon bromide tablets seemed to be effective from two and one-fourth to two and three-fourths times as long as the regular Mestinon tablets. In general, the slow-release Mestinon bromide tablets can be expected to last two and one-half times as long as the ordinary tablets.

The largest dosage of prolonged-action Mestinon bromide prescribed was 6 tablets every six hours for a total of 24 tablets per day, which would be equivalent to 72 ordinary Mestinon tablets. The smallest dosage was one tablet morning and night. The variation in dosage with prolonged-action Mestinon bromide tablets is the same as with regular Mestinon. Increases and decreases in dosage for a patient occurred during the course of treatment. The condition of one patient could be completely controlled, as far as myasthenic symptoms were concerned, by the administration of two prolonged-action Mestinon tablets per day, as compared with identical control of symptoms by the administration of three prolonged-action neostigmine tablets. Once a patient has been adjusted to this form of prolonged medication, changes do not seem to occur in the difference of absorption rates. However, in some

patients who were completely controlled on a six-hour basis the interval eventually had to be reduced to four hours.

Apparently there is no difficulty, as far as the age of the patient is concerned, in absorbing the material, and both the severe and the mild cases were equally benefited. We have had no reactions whatsoever from the prolonged-action Mestinon tablets, except that, when the dosage has been too strong, overdosage symptoms have occurred. There is no question that in suitable patients a prolonged-action Mestinon tablet of the type described gives a prolonged medication effect superior to the ordinary tablet and is, therefore, of great benefit to some patients. The duration of the action varies with the severity of the disease, the shortest being 4 hours, the average approximately 6 hours, and the longest 12 hours. Of 109 patients transferred to therapy with prolonged-action tablets of Mestinon bromide, 82 have continued their use and prefer them because of the decreased frequency of medication and smoothness of action (table 2). Thirty-two of the 82 patients have found need to combine the prolonged-action Mestinon tablets with other cholinergic drugs.

TABLE 2.—*Results with Prolonged-Action Mestinon Bromide Tablets in 109 Patients*

Clinic	Max. per Day	Min. per Day	Av. per Day	Better than Reg. Med.	Equal	Not So Good	Over-dosage	Total Patients
New York	24	1	9	32	3	2	4	46
Boston	10	1	10	24	3	2	5	34
Indianapolis ..	20	1	12	26	1	1	1	29
Total	24	1	10	82	7	5	10	109

Summary

Prolonged-action or slow-release tablets of neostigmine bromide, containing three regular doses of 15 mg. each, and a half-strength form, containing three doses of 7.5 mg. each, have been tried in the treatment of 85 patients with myasthenia gravis. Prolonged-action or slow-release tablets of Mestinon bromide, containing three regular doses of 60 mg. each, and a half-strength form, containing three doses of 30 mg. each, were tried in treating 109 patients with myasthenia gravis. In the case of the neostigmine bromide tablets, 54 of the 85 patients have found them superior to their regular medication and are still taking them. In the case of the Mestinon bromide tablets, 82 of the 109 patients still continue to take these tablets. The greatest value of this type of medication is in eliminating the need of doses during the sleeping hours.

4 E. 89th St. (28) (Dr. Osserman).

The prolonged-action Mestinon bromide tablets used in this study were supplied through Dr. T. C. Fleming of Hoffmann-La Roche, Inc., Nutley, N. J. The original prolonged-action neostigmine bromide tablets were supplied by A. H. Robins Co., Inc., Richmond, Va., and a subsequent form of this material was supplied by Hoffmann-La Roche, Inc.

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The Osteoarthritic Joint.—In 1948 we were surprised to note that the temperature inside the osteoarthritic joint was not normal or slightly subnormal as we had supposed, but rather was increased. The normal knee joint temperature is about 33 degrees C., the active rheumatoid arthritic knee temperature is about 37 degrees C., and the osteoarthritic knee about 35.5 degrees C. An asymptomatic knee, even showing extensive degeneration on x-ray, usually had a normal joint temperature. After weight-bearing exercise the temperature of an osteoarthritic knee rose much more than the normal or rheumatoid arthritic joint, often to 40 degrees or 41 degrees C. Further, the rate of cooling of such a joint on rest after exercise was much slower than in either the normal or rheumatoid joint, often requiring several hours before the control temperature was reached. From these observations we have concluded that a chronic low-grade inflammation or congestion does exist in the symptomatic or active osteoarthritic joint, possibly a result of frequent irritation of the synovium by the excessive heat of friction on use. The slower rate of cooling would also indicate a decrease of blood flow through the membrane. Since the osteoarthritic experiences his joint pain mainly during and after prolonged use, we may have a logical explanation of his pain at last. A marked congestion of the synovium resulting from the excessive heat of friction, with the delayed dispersion of this heat, could account for the stiffness of the joint after periods of rest. More definitive proof is needed, however, before this theory is completely accepted.—J. L. Hollander, M.D., The Diagnosis and Management of Osteoarthritis, *Cincinnati Journal of Medicine*, November, 1956.

V 16
1957

FREQUENCY OF DEFECTS IN INFANTS WHOSE MOTHERS HAD RUBELLA DURING PREGNANCY

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and
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The authors report the results of actual examination of infants born to mothers in whom rubella during pregnancy was diagnosed by a physician. Of 104 women who had rubella during the first trimester, 28 delivered normal infants. Congenital defects were found in 3 infants; there were 3 stillbirths, 12 other fetal deaths, 48 therapeutic abortions, and 10 cases lost from study. The incidence of congenital deformities among the live-born babies of women with rubella during the first trimester of pregnancy was 9.7%. No controls were used, so that a comparison with women who had no rubella could not be made. Rubella appears to increase the likelihood of malformations, but the high rates of incidence set by early authors are exaggerated. The recommendation of therapeutic abortion because of rubella should not become routine, but should take into account all known factors in the situation, such as the age and fertility of the mother. Until more information is obtained on relative risks, physicians owe it to their patients and to society to advise parents to expose their susceptible young daughters to rubella.

The association between rubella in a pregnant woman and the birth of a malformed infant, which was first indicated by Gregg,[1] has been stressed so strongly and advertised so widely that many physicians and pregnant women assume that one is necessarily followed by the other. As a result, therapeutic abortions are advised by physicians and demanded by pregnant women. In New York City, from 1949 to 1955, 45 therapeutic abortions were performed in 104 women who had rubella during the first three months of pregnancy. In 1943 Swan and associates [2] published the results of an investigation of congenitally malformed infants. The investigation was retrospective in design. It started by observing infants with malformations and then questioning their mothers on the occurrence of rubella during their pregnancies. The authors concluded that, if a woman had rubella during the first two months of pregnancy, the chance of giving birth to a congenitally defective child was 100% and, if she contracted rubella during the third month, the chance was about 50%. Numerous case reports soon appeared, and several retrospective studies were initiated. In an investigation conducted by Miller [3] for the American Academy of Pediatrics, out of 132 infants whose mothers had rubella during pregnancy, 86% had congenital defects. Wesselhoeft,[4] in 1949, summarized the reports in the literature, most of them retrospective in nature. Of 780 infants whose mothers had rubella in pregnancy, 656 or 80% were malformed. Such astounding percentages have been accepted by many physicians as authentic rates of incidence, and pregnant women have been urged to have therapeutic abortions performed if they had rubella.

A little thought will show the inaccuracy of the cited percentages. In the retrospective studies cited, the start was made with the defective child, and the path was retraced to discover what happened to the mother during her pregnancy. Frequently the diagnosis of rubella was inaccurate because it was not made by a physician. Often it was unreliable because the mother had to remember an event which occurred a year or more before. The feeling of guilt that possessed a woman for having given birth to a deformed child undoubtedly motivated her sometimes to remember some rash or other eruption that she had early in pregnancy and identify it as rubella. The main objection to this type of study, however, is statistical. No consideration is given to the children who were born normal and who therefore escaped from the study. If 100 pregnant women give birth to 100 infants, of whom 10 are deformed, the incidence is 10%. If the inquiry starts with the 10 deformed infants and works back, the finding will be that all their mothers had rubella during pregnancy. One can thoughtlessly consider this a 100% incidence.

A few prospective studies have been reported. These are summarized by Ingalls and Purshottam,[5] who point out that the criteria for including them were based on certain principles. These were (1) selection of cases before the children's births, (2) diagnosis of rubella by a physician, and (3) record of the outcome of conception. In a paper presented at the annual meeting of the American Public Health Association in 1956, Ingalls added a few more cases from the literature and some from personal reports. He thus obtained a record of 63 births to women who had rubella during the first trimester of pregnancy. Five of these births were stillbirths, and in nine cases there were congenital deformities.

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The study which Lundström [6] made in Sweden of all women admitted to hospitals for delivery in 1951, when an epidemic of rubella occurred, was controlled and might have yielded valuable information. The women registering were questioned about the occurrence of rubella during their pregnancies, and their infants were examined at birth for deformities. Unfortunately, the diagnosis of rubella was made by

TABLE 1.—*Reported Cases of Rubella in Pregnant Women, New York City, 1949-1955*

Year	Total Cases, No.	Cases of Women, 15-45 Yr. of Age, No.	Rubella During Pregnancy: Trimester 1st	2nd	3rd	Total
1949	3,447	252	10	7	3	20
1950	1,597	3	1	0	0	1
1951	4,122	371	8	16	9	33
1952	3,267	314	15	9	4	28
1953	2,315	208	10	6	5	21
1954	1,186	53	2	2	1	5
1955	8,891	1,327	57	49	19	125
Total	24,825	2,528	103	89	41	233

history in 80% of the cases; in only 20% was the diagnosis made by a physician. Furthermore, the definition of congenital malformation included melena, anemia, cerebral hemorrhage, and asphyxia neonatorum. A rate of 4.5% of congenital malformations and 5.9% of stillbirths and neonatal deaths among 579 infants born to women who contracted rubella during the first four months of pregnancy is compared with a rate of 1.4% of congenital malformations and 1.8% of stillbirths among the 226 controls.

Method

The present investigation was started in 1949 as a prospective study in the expectation that sufficient data could be obtained in a few years to give an indication of probable incidence. Such a study can have as its start the pregnant woman or the woman with rubella. In either case the woman, if pregnant, must be followed to term, and the product of conception observed. This study began with the receipt of reports of cases of rubella from physicians. The case reports of women, 15 to 45 years of age, were regularly pulled, and these patients were visited by a medical inspector who inquired about the pregnancy. Frequently, the private physician requested a consultation, and the patient was seen by a diagnostician of the department of health. If a woman was pregnant, the date and the place of expected delivery were noted. At the time of delivery the medical inspector visited the hospital and obtained data on the birth. If the woman had not delivered, she was visited to determine whether a miscarriage or an abortion had occurred. If a live child resulted, it was examined by the inspector, or information was obtained from the physician attending the birth. About a year later a revisit was made to determine whether any deformities had been discovered during the year. No controls were planned, since it did not appear that there would be sufficient cases to make statistical comparisons significant. Also, the study was focused on obtaining rates of incidence, which could be compared with those cited in retrospective studies. The investigation is now being enlarged to include other viral diseases and to use controls.

Results

There were reported 24,825 cases of rubella in New York City in the seven years 1949-1955. Of these, 2,528 occurred in women, 15 to 45 years of age; 233 of these women were pregnant—103 in the first trimester, 89 in the second, and 41 in the third (table 1).

The fate of the women and the products of their conceptions are indicated in table 2. Among women who had rubella during the first three months of pregnancy, 10 were lost from the study, and 48, or almost half, had therapeutic abortions, 45 for rubella and 3 for other reasons. There were 15 fetal deaths, of which 3 could be designated as stillbirths, since the fetuses were more than 24 weeks old, and there were 28 normal births. One woman gave birth to a single and one to a pair of malformed infants. The twins had bilateral cataracts and congenital heart disease; they were fraternal twins, one male and one female. The single infant had bilateral cataracts and microphthalmus. The mothers of these infants had rubella during the fourth week of pregnancy. During the second trimester there was the birth of a single infant with congenital heart disease. The child died at the age of 36 hours. Diagnosis at autopsy was tetralogy of Fallot. The mother had rubella during the 14th week of pregnancy. All these outcomes of pregnancies occurred in 1955, when there was an epidemic of rubella in New York City.

Two other infants with congenital malformations were observed in 1951. Both had polydactyly. The mother of one had rubella during the 22nd week of pregnancy, and the mother of the other during the

TABLE 2.—*Outcome of Pregnancy in Women with Rubella, New York City, 1949-1955*

Outcome of Pregnancy	Rubella During Pregnancy: Trimester 1st No.	%	2nd No.	%	3rd No.	%	Total No.	%
Normal births	28	26.9	74	83.2	37	90.3	139	59.4
Congenital malformations	3*	2.9	1	1.1	0	0.0	4*	1.7
Stillbirths	3	2.9	2	2.2	1	2.4	6	2.6
Other fetal deaths	12	11.5	1	1.1	0	0.0	13	5.6
Therapeutic abortions	48	46.2	4	4.5	0	0.0	52	22.2
For rubella	45		4				49	
For other reasons	3		0		0	0.0	3	
Lost from study	10	9.6	7	7.9	3	7.3	20	8.5
Total	104*	100.0	89	100.0	41	100.0	234*	100.0

* One set of twins counted as two separate malformations.

29th week of pregnancy. The mother and grandmother of the first-mentioned also had polydactyly. These infants are not included in table 2.

The apparently large number of fetal deaths is explained by the fact that in New York City a fetal death is defined as any product of conception except a live birth, and by the requirement that a death certificate must be filed for all such deaths. Even with

V 16
1957

this mandatory reporting, five of the fetal deaths were not recorded. They were discovered in the course of the follow-up during the investigation. In most communities only stillbirths are recorded.

The rate for congenital deformities in table 2 is based on the number of conceptions. It does not give a good picture of the occurrence of deformities because the total number of conceptions includes those of women lost from the study and those of women who underwent therapeutic abortions. There is no information on how many of the products of conception in these two groups would have been normal children and how many congenitally malformed children. If proper controls were available, one could compare the rate of live-born malformed infants in the controls with that of malformed infants born to women who had rubella during the first trimester of pregnancy. In New York City the reporting of congenital malformations on the birth certificate is required. Unfortunately, such malformations are not generally noted. The birth certificates of 121 of the 143 liveborn infants in the study were available. On none was a congenital deformity noted, not even on the certificates of the four malformed infants found in the follow-up study. Only 21% of the birth certificates recorded the fact that the mother had rubella during her pregnancy, although this information is also required.

A comparison was made with the results of a study by McIntosh and associates [7] of pregnant women in the antepartum clinic of the Sloane Hospital for Women in New York City between 1946 and 1953. All these patients were four months or less pregnant on admission, and the infants were followed for six months to a year after birth. The two studies are not exactly comparable, since there was a slight difference in the years during which the studies were made, the populations were somewhat different, and the personnel examining the mothers and babies was different. Nevertheless, the studies were sufficiently alike to make the comparison of interest. There were 386 children with congenital malformations among 5,530 live births in that study, an incidence of 7%. In the present study 3 infants with congenital malformations were found among 31 live-born infants whose mothers had rubella during the first trimester, or 9.7%. If the twins are considered as one pregnancy, there were 2 pregnancies with resultant malformations in a total of 31 pregnancies ending in a live birth, or 6.4%. McIntosh and associates included all malformations in their calculations. They classified the malformations according to system. If there are included only the malformations of the cardiovascular and central nervous systems, they had a total of 107 among 5,530 live births, or 1.9%. The malformations associated with the "rubella syndrome" are those of the brain, heart, eyes, and ears and would be included in these two systems. This rate is about five times as high as among the live-born infants of women who had rubella during the first three months of pregnancy in the present study if infants are counted and three times as high if pregnancies resulting in malformations are counted.

Ingalls,[5] in the report to which allusion has previously been made, tabulates the outcome of pregnancy in prospective studies from the literature and adds some cases from personal information. Table 3 gives his data with the addition of two references from the literature, one from personal information, and the results of the present study. A few changes have been made in Ingalls' table. The reference to Hill and Galloway lists one stillbirth and no case of congenital deformity during the first trimester; these figures should be reversed. In Ingalls' own series, two cases of congenital malformation are listed. One of these was congenital heart disease; the other was mild hypospadias. The latter has been excluded. The total of these investigations indicates that there occurred 15 cases of congenital malformation among 125 births to women who had rubella during the first tri-

TABLE 3.—*Outcome of Pregnancy in Women with Rubella, as Reported in Prospective Investigations*

Source	Cases, No.	Rubella During Pregnancy								
		1st Trimester			2nd Trimester			3rd Trimester		
		Total Births	Congenital Deformities	Stillbirths	Total Births	Congenital Deformities	Stillbirths	Total Births	Congenital Deformities	Stillbirths
Grönvall and Selander: Nord med. 37:409, 1948	28	13	0	2	13	1	1	2	0	**0**
Aycock and Ingalls: Am. J. M. Sc. **212**:366, 1946	**4**	2	**1**	0	1	0	0	1	0	**0**
Fox and Bortin: J. A. M. A. **130**:568, 1946	12	**9**	**1**	**1**	1	0	0	2	0	**0**
Hill and Galloway: Lancet **1**:289, 1949	9	5	1	0	**3**	0	0	1	0	0
Ingalls and Purshottam [8]	19	13	1	0	**6**	1	1	0	0	0
Ingalls: Personal communication to authors	12	10	**1**	**0**	**2**	**0**	0	0	0	**0**
Korns: Proc. Kessler Inst. Rehab. **1**:17, 1953	19	9	**0**	**0**	**5**	0	0	**5**	**0**	0
Tartakow: Personal communication to authors	19	6	**0**	**0**	**11**	**0**	1	**2**	0	**0**
Brown and Nathan: Lancet **1**:975, 1954	26	13	**3**	**2**	**7**	**0**	**1**	**6**	0	**0**
Brawner: J. M. A. Georgia **44**:451, 1955	17	11	4	1	4	2	0	2	0	0
Present series	149	34	3	3	77	1	2	38	0	1
Total	314	125	15 (12%)	9 (7.2%)	130	5 (3.8%)	6 (4.6%)	59	0	1 (1.7%)

mester, an incidence of 12%. All these studies suffer from the fact that no controls were used. Fox and Bortin's case is included, although there is doubt about the deformity. The infant was cyanotic at birth and is said to have had hydrocephalus at birth "which receded spontaneously, the child being perfectly normal at present."

Comment

The uncommon occurrence of rubella in young adults makes it difficult to collect a large enough series of cases in pregnant women, unless an epidemic of the disease occurs. Thus, in New York City 125 cases of rubella in pregnant women were found in 1955, when there was an epidemic of the disease, whereas only 108 cases were gathered in the six preceding years. To obtain sufficient data, investigation should be undertaken by several groups cooperatively, preferably in communities where rubella is a reportable disease. Such an investigation should start with the pregnant woman with rubella, diagnosed by a physician. Supervision should be continued through pregnancy until term or miscarriage. If a live-born infant results, its condition should be determined; it should be followed for about a year, and an evaluation then made by a physician. Proper controls should be included in order to obtain comparative rates.

From the results of the present study and other reported prospective studies one can conclude that the incidences of congenital malformations reported by early workers are fantastically high and incorrect. The recommendation of therapeutic abortion based on those rates is not medically justified. While an association between rubella early in pregnancy and the occurrence of congenital deformities in the offspring appears to exist, the degree of association has not been determined. Present data indicate a rate of approximately 12% of total births. This is a far cry from rates of 90 to 100% reported in retrospective studies. A controlled prospective study is still needed to obtain comparative rates and to fill other gaps in our knowledge.

It is true that it matters little to the individual woman whether the over-all rate of deformity is great or small if her child is affected. However, there is quite a difference between informing her that she has a 90% chance of giving birth to a normal baby and telling her that there are 90 chances out of 100 that her baby will be deformed. If the woman is young, has a child or two, and does not find it difficult to conceive, she may not want to take the extra risk, even if it is not large. On the other hand, an older primipara, particularly one who has found it difficult to conceive, will be willing to take the risk. At any rate it is scientifically unsound and medically unjustified to state that a risk is higher than the facts warrant.

Until more information is obtained on relative risks, physicians owe it to their patients and to society to advise parents to expose their susceptible young daughters to cases of rubella. This is a mild disease in childhood and rarely causes complications. It confers a permanent immunity and later will obviate the anxiety of pregnant women who may be exposed to it.

Summary and Conclusions

A prospective study of pregnant women with rubella was carried out in New York City from 1949 to 1955. Of 104 women who had rubella during the first trimester of pregnancy, 27% gave birth to normal infants, 3% to congenitally malformed babies, 3% to stillbirths, and 12% to other nonviable fetuses. Therapeutic abortions were performed on 46%, and the cases of 10% were lost from the study.

The incidence of congenital deformities among the live-born babies of women with rubella during the first trimester of pregnancy was 9.7%. In a similar study elsewhere in New York City of pregnant women who did not have rubella, reported recently, the incidence of congenital malformations was 7%. If only defects of the brain, eyes, ears, and heart are considered in the latter study, the incidence was 1.9%.

Large-scale prospective studies with controls are needed to ascertain comparative rates of incidence. The available data indicate a rate of about 12% of total births. The fantastically high rates set by early authors were based on retrospective studies of malformed infants, which did not account for babies who were born normal and who therefore escaped from the study, and hence are incorrect. Blanket advocacy of therapeutic abortion in pregnant women who develop rubella during the early months of pregnancy is medically unjustified. Exposure of susceptible young girls to cases of rubella is medically justified and is a sound public-health procedure.

125 Worth St. (13) (Dr. Greenberg).

Miss Marcia Zimet, Statistician, New York City Department of Health, gave statistical advice and supervised the search of birth certificates and statistical computations.

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V 16
1957

CLINICAL NOTES

HYDRAULIC DEVICE FOR REMOTE CONTROL OF INJECTION DURING CAROTID ANGIOGRAPHY

Joseph A. Epstein, M.D.
and
Bernard S. Epstein, M.D., New Hyde Park, N. Y.

We have long been concerned with the problem of exposure to irradiation in the performance of cerebral angiography. The lead rubber drapes suggested for protection have proved cumbersome in our experience.

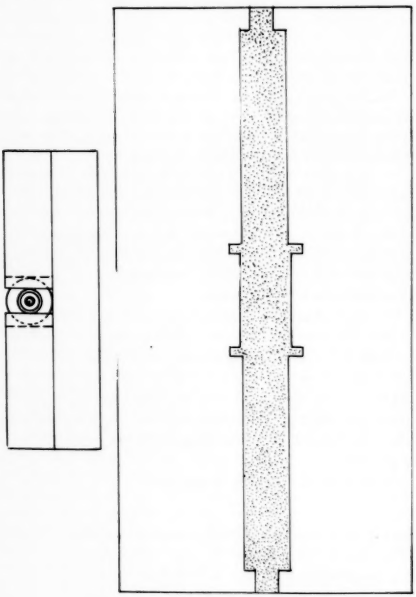

Fig. 1.—Scale drawing of apparatus.

The amount of radiation scatter encountered with careful centering and the use of small cones still is hazardous. Automatic injection devices are limited by the handicaps incurred by losing the desired "feel" of the injection and the expense and complexity of such apparatus.

From the Department of Surgery, Division of Neurological Surgery, and the Department of Radiology, the Long Island Jewish Hospital.

Up to the present time we have used a combination of careful coning, lead rubber aprons on the operator, and a hasty retreat from the site of the procedure immediately after injecting the contrast medium. This has been fairly successful because the chance of disengaging the Cournand needle is lessened by attaching the

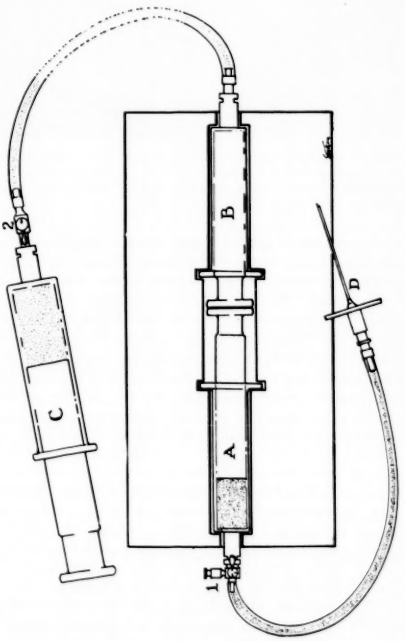

Fig. 2.—Apparatus assembled with syringes in place, ready for use.

syringe to the needle with a 12-in. length of flexible sterile plastic tubing (Venotubes, Abbott Laboratories).

It occurred to us that a hydraulic device which would retain for the operator the "feel" of the injection and permit the injection to be made from the safe recesses of the control booth would advance our safety. If this were constructed with easily available material at nominal cost, and would work repeatedly and adequately, a contribution worth mentioning might result. We believe that the device described here meets these qualifications.

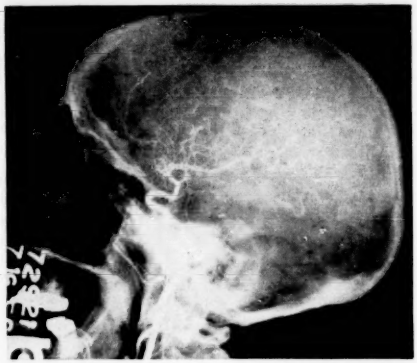

Fig. 3.—Cerebral angiogram using conventional technique of direct injection through short length of plastic tubing. (Cerebral angiogram of same patient made four months later using present apparatus gave same picture.)

The apparatus is constructed from a length of 1-in. soft wood, upon which two additional 1-in. widths are screwed to permit the placement of two 20-cc. Luer-Lok syringes. These are kept in position by cutting out a pair of parallel grooves into which the upper lips of the syringes fit. The distance between these grooves is so set that with one syringe empty and the other containing 8 cc. of contrast medium the heels of both pistons are in apposition (fig. 1). The tip of the syringe containing the contrast medium is connected by means of a short length of sterile plastic tubing to the Cournand needle after this has been successfully introduced and threaded into the common carotid artery. The impeller syringe is connected by means of a 12-ft. length of stiff plastic tubing to a 20-cc. syringe.

This tubing was obtained from a pet shop which carries equipment for aquariums. For hydraulic fluid we use light mineral oil, filling the system so as to include 15 cc. in the actuating 20-cc. syringe. This serves to compensate for any stretch in the plastic hose during the injection (fig. 2).

When the plunger on the 20-cc. master syringe in the operator's hand is pushed forcibly, the fluid enters the impeller syringe, ejecting its piston. This pushes on the piston of the syringe containing the contrast medium, ejecting the contrast medium through the Cournand needle with as much force as if the injection had been made with the syringe immediately attached (fig. 3).

Once assembled, with the tubing wired to the adaptors, the hydraulic system can be kept full constantly. The syringe with the contrast medium can be replaced after each use. This is suggested inasmuch as repeated use of syringes with diatrizoate (Hypaque) or iodopyracet (Diodrast) concentrated is undesirable because of the possibility of the pistons sticking. The entire apparatus is kept in readiness and, after the needle has been introduced, is fixed to the patient's chest by means of a strap encircling the body. Between injections the plastic tube connecting the syringe with contrast medium to the indwelling needle can be clamped off, or an infusion of saline solution may be introduced through a two-way stopcock. If desired, the Cournand needle may be disconnected and a stylet introduced to keep it patent.

We have used this apparatus repeatedly with satisfaction. It provides a safe, reliable, and inexpensive method for the rapid injection of contrast material, enabling the operator to control the procedure from a distance. The apparatus can be used equally well for angiocardiography in infants, and we are constructing a larger one for angiocardiography and aortography in adults.

270-05 76th Ave. (Dr. B. S. Epstein).

Radiochemistry and Atomic Clocks.—Radioactive dating has been one of the radiochemist's principal contributions to geology and cosmology. The formation of lead by the radioactive decay of uranium-238, uranium-235, and thorium-232, in principle, affords a threefold opportunity for the determination of the time elapsed since the most recent crystallization of a mineral. The scale is in terms of thousands of millions of years, the average lifetime of these isotopes. In addition to these three isotopes, two others are of increasing importance—potassium-40, which forms argon-40 in about 10 percent of its disintegrations and has a half-life of 1250 million years; and rubidium-87 which forms strontium-87, again on a time scale of thousands of millions of years. With these five atomic clocks, it is possible to establish the age of the earth with some reliability, and it now appears that the earth and the meteorites probably all are about 5000 million years old. This remarkable result is one of the cornerstones of modern cosmology and geophysics. These atomic clocks are almost entirely contributions of radiochemists. Other possibilities may exist, but radioactive dating is firmly established and is already a cornerstone of geophysics.—W. F. Libby, Radiochemistry, *Scientific Monthly*, September, 1956.

V 16
1957

PROLONGED TELEVISION VIEWING AS CAUSE OF VENOUS AND ARTERIAL THROMBOSIS IN LEGS

Meyer Naide, M.D., Philadelphia

It has been recognized that prolonged sitting in one position while driving an automobile for long distances may result in venous thrombosis in the legs. The occurrence of thrombosis of major vessels in the legs of three patients who had been watching television for prolonged periods while sitting in awkward positions drew attention to another cause for the development of thrombophlebitis and arterial occlusion. Television lends itself peculiarly to prolonged sitting during which the legs may not be moved much or at all, since the viewer must face the screen to watch the program, in contrast to listening to the radio where the listener may move about at will. In two of the patients described below venous thrombosis occurred in the legs, with pulmonary embolism. In the third patient thrombosis of the femoral artery occurred as the result of prolonged sitting while the patient was watching television with her legs tucked under her, which was her favorite way of sitting during television programs.

Report of Cases

CASE 1.—A 79-year-old physician was seen on Sept. 10, 1956, with a history of pain and swelling of the left leg which had been present for one week. The symptoms had appeared after he had been sitting still for one and one-half hours watching television. The left leg had been in an awkward position with pressure against the popliteal space during this period. Severe pain appeared behind the left knee immediately after the prolonged sitting. When he was seen there was edema of the left leg, and the left calf was 2 cm. greater in circumference than the right. The left popliteal space was very tender and so was the calf. Homans' sign was negative. A diagnosis was made of acute thrombophlebitis of the left leg. He was hospitalized and placed on therapy with heparin and bishydroxycoumarin (Dicumarol). The heparin was withdrawn three days after admission, but therapy with bishydroxycoumarin was maintained. Three days after stopping the heparin therapy, the patient developed sudden pain in the right side of the chest. Two days after the development of chest pain there was x-ray evidence of pleural effusion and thickening, with increased density at the right phrenocardiac angle. The diagnosis was that of a pulmonary infarct. Heparin was given in addition to bishydroxycoumarin with gradual clearing of signs in the chest and subsidence of the symptoms in the legs. He has done well since his discharge in October, 1956, with no postphlebitic symptoms.

CASE 2.—A 68-year-old man was seen on Oct. 1, 1956, with a history that he had watched television four weeks previously while sitting with one leg thrown over the side of a sofa chair and had fallen asleep. He awoke about an hour later with discomfort in the right leg and development of swelling and increased pain in the leg the following day. He had been treated with bed rest and penicillin for four weeks before being seen. On examination, the right calf was tender and was 2 cm. greater in circumference than the left. Homans' sign was negative. The right foot was warmer than the left. There was no pallor, cyanosis, or rubor of the extremities. Blood pressure was 140/190 mm. Hg. Rales were heard at both bases. Heart and abdomen appeared normal. A diagnosis was made of thrombophlebitis of the right leg with findings suggestive of pulmonary emboli. He was hospitalized and placed on heparin and bishydroxycoumarin therapy. X-ray of the chest disclosed evidence of pulmonary infarction at the right base. His symptoms subsided gradually with anticoagulant therapy, and he was discharged at the end of three weeks in the hospital with slight residual edema.

CASE 3.—A 39-year-old woman came in on April 21, 1952, with a history that on April 15th she had been sitting with the left leg tucked under her off and on for at least two hours while watching television. When the patient stood, the foot then the leg seemed numb, dead, white, and cold. She massaged the leg, but soreness and numbness as well as pallor persisted. She stated that her favorite position while watching television was to have her legs tucked under her. On examination, no pulses were palpable in the left leg, even in the femoral artery. Oscillometric readings were almost zero in the left leg and lower thigh and were normal in the right leg. The left foot and leg were distinctly colder than the right. Color changes on elevating the legs disclosed rapid blanching of the left foot. On dependency the left foot flushed slowly, with final discoloration of the first toe. Blood pressure was 132/184 mm. Hg. Heart, lungs, and abdomen appeared normal. This patient's condition gradually improved with vasodilator drugs, although she still has intermittent claudication on walking about a block and a half. The left femoral pulse is still absent.

Comment

While watching television programs a viewer may sit for hours at a time in a relatively static position, perhaps moving only occasionally. Homans [1] has emphasized the frequency of thrombosis of the deep leg veins as the result of prolonged sitting, particularly in automobiles. Tall men are peculiarly susceptible to venous thrombosis after long automobile trips.[2] Simpson [3] reported 21 sudden deaths from pulmonary embolism in persons in or leaving air-raid shelters in World War II. The cause was found to be venous thrombosis in legs, resulting from long periods of sitting on chairs or benches with the edges compressing the veins. Wright [4] has pointed out the importance of moving frequently and removing girdles and other clothing that bind in the fold of the groin during travel that requires prolonged sitting.

From the Department of Medicine, Woman's Medical College of Pennsylvania, and the Department of Medicine, Albert Einstein Medical Center.

One need not belabor the point that stasis is a contributory factor in the development of venous thrombosis. Television viewing, which requires that the individual face the screen for long periods, may create a favorable situation for the development of thrombosis of veins and also of arteries, particularly if the legs are not moved frequently or if there is compression of the popliteal vein as the result of awkward sitting with pressure on the poplilteal space. Television viewers should get up and move about at least once an hour in addition to moving the legs frequently. Girdles and other tight garments should be removed before prolonged television viewing. It is of possible significance that the two patients who developed venous thrombosis were elderly.

Summary

Three patients developed major thrombosis in the legs, two in the veins, with pulmonary embolism, and one in the femoral artery, following prolonged sitting in awkward positions while viewing television programs. Prolonged television viewing without moving the legs, particularly by elderly individuals, may cause sufficient stasis to produce venous and arterial thrombosis. Television viewers should get up and move about at least once an hour in addition to moving the legs frequently. Girdles and other tight garments should be removed before prolonged television viewing.

2034 Spruce St. (3).

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V 16
1957

IMPLANTATION METASTASIS AFTER NEEDLE BIOPSY OF LIVER TUMOR

Samuel Zelman, M.D., Topeka, Kan.

Implantation of tumor cells in the track of a needle biopsy of the liver apparently occurs rarely. It was observed in one reported instance after needle aspiration of a malignant hepatoma.[1] Another instance involving hepatoma was mentioned in a discussion.[2] It has not been encountered in Schiff's extensive experience.[3] The case reported below is the only such in an experience which included 41 aspirated malignant tumors, 34 of them from the liver.

Report of a Case

A 59-year-old male had an abdominoperineal resection of an adenocarcinoma of the rectum in July, 1955, and was observed regularly thereafter for recurrence. Beginning in December, 1955, he had indigestion, gradual weight loss, liver enlargement, and a gradually rising serum alkaline phosphatase level. Needle aspiration biopsy of the liver through an anterior approach in July, 1956, revealed metastatic adenocarcinoma. In December, 1956, a metastatic nodule was found in the abdominal skin at the site of needle entry. When surgically excised, this nodule measured 1 cm. in diameter and was accompanied by a second smaller nodule found directly beneath it subfascially. On histological examination, both nodules were found to consist of adenocarcinoma. The patient died in January, 1957, when extensive metastases were found at autopsy.

From the Medical Service, Winter Veterans Administration Hospital.

Comment

This is the third known instance of implantation metastasis after aspiration of liver tumor and the first involving metastatic liver tumor. The rarity of such an occurrence, as well as the generally hopeless prognosis of malignant tumors in the liver, should relieve concern regarding the possible implantation of metastases along the track of needle biopsy of the liver.

Dr. Phyllis J. Burdon of the Medical Service gave permission to report the case.

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SPECIAL ARTICLE

SOCIAL SECURITY FOR PHYSICIANS

1. THE OLD AGE, SURVIVORS AND DISABILITY INSURANCE PROGRAM (OASDI)

The United States Social Security Act, passed in 1935, contains several different programs under the general heading of "Social Security." We are concerned here only with that portion of the act originally known as the Federal Old Age Benefit System, later the Old Age and Survivors Insurance program, and now, after many amendments, the Old Age, Survivors and Disability Insurance Program. The original objective sought was twofold in character: (1) to remove older workers from the labor force and (2) to provide a federal basic minimum retirement benefit to such workers.

The act originally contemplated and provided for a close relationship between the amount of Social Security taxes paid and the benefits received by retired workers. The plan was relatively simple. Only retired workers over 65 were to receive benefits. A contributory system was established based on special taxes paid by workers and employers. The proceeds were invested in government securities which were maintained in a special fund.

Since 1935 the program has been changed in many fundamental respects:

1. Coverage has been broadened so that substantially the entire working population is now covered, plus their dependents and survivors. Only self-employed physicians, certain government employees, and a few other small groups are excluded.

2. Existing benefits have been increased, new benefits and beneficiaries added, and Social Security tax schedules changed. The original objective of income maintenance for retired workers, later for their survivors and dependents, was broadened significantly in 1954 and 1956 when special income maintenance provisions were included for the disabled.

In broad outline the act, as presently constituted, includes the following provisions which are of particular interest to self-employed physicians.

Social Security Taxes

The self-employed pay Social Security taxes annually on the first $4,200 of income. The tax is paid at the time of filing the individual income tax return. It is paid regardless of age and whether or not the individual is receiving Social Security benefits.

The following table shows current Social Security tax rates and presently scheduled increases for the self-employed:

Year	%	Tax (%×$4,200)
1957-1959	3⅜	$141.75
1960-1964	4⅛	173.25
1965-1969	4⅞	204.75
1970-1974	5⅝	236.25
1975-	6⅜	267.75

The taxes computed in this table will, of course, be appreciably higher if the tax rate or the base earnings taxed are increased by any future Congress. Several bills now in Congress include increased taxes and higher base earnings subject to tax.

Eligibility for Benefits

Old Age Retirement Benefit.—You are eligible for retirement benefits at age 65 if you are (*a*) "fully insured," (*b*) have retired, and (*c*) have applied for payments. You are "fully insured" at retirement age if you have a "quarter of coverage" for each two calendar quarters after 1950. A "quarter of coverage" corresponds to a calendar quarter, and is considered a "covered" quarter if self-employed earnings during that year are at least $400. To reach "fully insured" status one must have at least six quarters of coverage. The attainment of 40 quarters of coverage entitles one to a "fully insured" status for life. A 1954 provision with respect to disability permits a covered worker to omit quarters during which his earnings record was "frozen" due to disability.

Eligibility for a retirement benefit also requires satisfaction of a work test. Between ages 65 and 72 you may not earn more than $1,200 in a year and receive benefit payments for all 12 months of the year (at age 72 the work test provision does not apply). In general one month's benefit is lost for each $80 or fraction thereof of earnings over $1,200 in a year. However, the monthly benefit may be paid no matter how much the $1,200 maximum is exceeded for any month in which the self-employed person does not render "substantial services in self-employment." The Social Security Administration has defined "substantial services" as actively engaging in the operation of one's trade or business. Decisions are made on the facts in each case. Income from savings, investments, pensions, and insurance is not included under these provisions.

The present maximum monthly benefit payable to the retired worker is $108.50.

Retirement Payments to the Self-employed Worker's Wife.—The wife of a retired "fully insured" worker is eligible for retirement payments if she is age 62 or over, or has a dependent child who is under 18 or disabled. The wife at 65 receives one-half of the monthly payment to the self-employed retired worker. The applicable amount, for example, for a 65-year-old wife whose husband was receiving maximum retirement benefits would be $54.30; the total for the couple would be $162.80. Similarly, a wife of a retired self-employed worker receiving

maximum benefits who had a dependent child under 18 or disabled would receive the same amount ($54.30 monthly) regardless of her age. A retired worker's wife between ages 62 and 65 receives a reduced benefit. A wife below the age of 62 without a dependent child under the age of 18 or disabled child receives no benefit.

Survivors' Benefits.—Monthly payments are made to a widow age 62 or over of a self-employed worker who was "fully insured" at death. Such a widow receives a maximum benefit of $81.40. A widow of any age (or a dependent divorced wife) with a dependent child under 18 or disabled of a self-employed worker who at death was covered under the act (not necessarily "fully" insured) is also eligible for a survivor payment. The maximum amount for a widow with one child is $162.80 and for a widow with two children, $200. Payments cease when the children reach 18. The widow again receives a benefit when she reaches 62.

Lump Sum Payment at Death.—The widow of a self-employed covered worker receives a maximum lump sum death payment of $255 for burial expenses.

Disability Benefits.—A self-employed worker at age 50 adjudged to be disabled as defined in the law who is "fully insured" and who has been covered for at least 20 quarters in the 40 calendar quarters before the onset of the disability is eligible to receive the retirement benefit that he would have received if he had reached the age of 65 ($108.50 maximum). No retirement benefit is provided for wives or dependent children under the existing program.

Disability under the act is defined as "any medically determinable physical or mental impairment which can be expected to be either of indefinite duration or result in death, and which renders an individual unable to engage in any substantial gainful activity."

Constitutionality

In 1937 the constitutionality of the Federal Old Age Benefit program was argued before the Supreme Court. In general the affirmative decision of the act's constitutionality was based on the argument by the government that this program was not "insurance" but a public welfare program based on taxation and the payment of benefits by the government on a statutory and noncontractual basis. The Supreme Court construed the program to be within the spirit of the general welfare clause of the Constitution on the basis of this argument. Notwithstanding the clear position of the Court that the Federal Old Age Benefit program was not insurance, Congress in 1939 changed the name of the program from Federal Old Age Benefit to Old Age and Survivors Insurance. The word "insurance" has been used routinely since that time to describe the program.

Social Security Trust Fund

Social Security taxes cannot by law be earmarked. All taxes are transmitted to the Treasury of the United States Government. The fund however is credited by the Treasury with receipts equivalent to the Social Security taxes received. The fiscal procedure is for the Treasury to transmit to the fund special bonds designated as "public debt obligations for purchase by the Trust Fund." Interest on these public debt obligations is applied in the same way. The fund represents the surplus of Social Security taxes over the benefits paid out plus the accrued interest less administrative expenses. Its value is represented by the special bonds issued by the Treasury which become a part of the public debt.

The Social Security taxes, plus the accrued interest, projected through 1975 are designed to insure revenues adequate to meet the obligations to eligible beneficiaries. In years when Social Security tax revenues are less than that year's benefit payments the trustees of the reserve fund exchange the special non-negotiable bonds for negotiable bonds from the United States Treasury and sell those bonds on the open market. No attempt is made to build up a reserve fund actuarially equal to the total projected obligation now estimated at approximately 250 billion dollars.

The principal purpose of the reserve fund as it was established in 1935 is to insure the continuation of contributory, special taxes from workers and employers, the proceeds of which, together with accrued interest, are designed to underwrite the total cost of the program. It is the contention of the proponents of the reserve fund mechansim that the contributory system could not have been established without a reserve fund identified as such, into which excess tax payments were placed as earmarked special bonds. The reserve fund is said to insure that the general revenues of the government will never be used to pay Social Security benefits. In 1950, to underscore this objective of the reserve fund the Congress voted that general revenue shall not be used in this program.

Many students of Social Security and government fiscal management contend that the reserve fund is a fiction that serves no useful purpose. They contend that the fund consists only of earmarked government obligations and that the interest applied to the account is in effect a double taxation on the people. They point to the repeated evidence of misunderstanding concerning the nature of the fund as shown by congressional attempts to add new expensive programs based on the false notion that idle cash is available in the fund. Furthermore, these opponents contend the fund promotes the fiction of absolute "rights" to benefits based on part ownership of the fund. The beneficiaries of the fund in a true sense, they say, are anonymous and current taxpayers have no statutory or other right to any portion of the bonds in the trust fund.

V 16
1957

Given a Social Security program, it can be said that a reserve fund provides certain practical administrative advantages but at the same time promotes dangerously false concepts of the nature of the program.

Future Program

This Congress will consider numerous amendments to OASDI which increase benefits and taxes, and introduce fundamentally new concepts. To the medical profession the most important are those which for the first time authorize hospital or medical care in addition to cash benefits. A specific proposal that will undoubtedly receive wide support is the reimbursement of hospitals by the fund for hospitalization of eligible retired Social Security beneficiaries. It is also being proposed that the present cash payment to eligible disabled beneficiaries at age 50 be made regardless of age and—of special interest to medicine—that rehabilitation of the disabled person be financed through OASDI funds.

COUNCIL ON DRUGS

Report to the Council

The Council has authorized publication of the following report.

H. D. KAUTZ, M.D., *Secretary.*

The Registry, established under the direction of the Subcommittee on Blood Dyscrasias of the Committee on Research, has received 257 case reports from 74 cooperating physicians in which a dyscrasia was suspected as having been caused by drugs or chemical substances. A review of these reports reveals that 10 cases were apparently associated with the use of the new drug promazine hydrochloride. Since the Registry is intended as a system for the alerting of physicians, it was concluded that the possible association of these cases with the use of this drug was sufficiently suggestive to warrant bringing this fact to the attention of the medical profession.

NORMAN DE NOSAQUO, M.D., *Secretary,*
Committee on Research.

BLOOD DYSCRASIAS ASSOCIATED WITH PROMAZINE HYDROCHLORIDE THERAPY

A review of the reports received by the Registry since July, 1956, revealed 10 cases of blood dyscrasias apparently associated with promazine (Sparine) hydrochloride therapy. A search of the English-language medical literature to the date of the preparation of this statement has uncovered two case reports of granulocytopenia associated with promazine hydrochloride therapy, one of which is among those reported to the Registry. Wyeth Laboratories has been most cooperative and has supplied an additional record of 8 cases not previously reported to the Registry, bringing the total to 18 cases in which promazine therapy was suspected as being associated with a case of blood dyscrasia. It should be pointed out that in seven instances the patients received other drugs such as chlorpromazine (Thorazine) hydrochloride. Although all of the cases of blood dyscrasias associated with the use of promazine hydrochloride probably have not been reported, it has been suggested that the rate of incidence of a dyscrasia is relatively low.

Although depression of granulocytes was prominent in every case reported, the bone marrow studies in some cases indicated a depression of other cellular elements as well. Of the 18 known cases, we have information that 4 ended fatally. In cases that were identified early, cessation of use of the drug and institution of appropriate measures were usually followed by fairly prompt recovery. Physicians who prescribe promazine hydrochloride should instruct attendants, nurses, and patients to discontinue use of the drug and to report immediately if there is any sudden occurrence of symptoms such as sore throat, fever, or malaise. These instructions must be stressed. The interim blood cell counts alone cannot be relied upon because the condition could develop suddenly between routine examinations.

Wyeth Laboratories has included a forceful warning and has placed it prominently in the leaflet available to the medical profession. The firm

should be commended for its diligence and willingness to cooperate with the subcommittee in its effort to bring this matter to the attention of physicians. Since the drug may possess potential for some harm, the subcommittee suggests that physicians limit its use to those conditions in which such use is warranted and avoid its use in the treatment of trivial or minor complaints.

Report to the Council

The Council has authorized publication of the following report.

H. D. KAUTZ, M.D., *Secretary.*

The following recommendations on first-aid measures for poisoning have been adopted by the Committee on Toxicology. These recommendations are made in response to numerous requests to the American Medical Association for general instructions for poisoning emergencies. They are intended for use in educating the public in what to do when poisoning occurs.

BERNARD E. CONLEY, PH.D., *Secretary,*
Committee on Toxicology.

RECOMMENDATIONS OF COMMITTEE ON TOXICOLOGY ON FIRST-AID MEASURES FOR POISONING

Emergency Telephone Numbers:
PHYSICIAN .....FIRE DEPT. .....
HOSPITAL ..... (resuscitator)
PHARMACIST .....POLICE .....
RESCUE SQUADS .....

The aim of first-aid measures is to help prevent absorption of the poison. SPEED is essential. First-aid measures must be started at once. If possible, one person should begin treatment while another calls a physician. When this is not possible, the nature of the poison will determine whether to call a physician first or begin first-aid measures and then notify a physician. Save the poison container and material itself if any remains. If the poison is not known, save a sample of the vomitus.

Measures To Be Taken Before Arrival of Physician

I. *Swallowed Poisons*

Many products used in and around the home, although not labeled "Poison," may be dangerous if taken internally. For example, some medications which are beneficial when used correctly may endanger life if used improperly or in excessive amounts.

In all cases, *except those indicated below,* REMOVE POISON FROM PATIENT'S STOMACH IMMEDIATELY by inducing vomiting. This can not be overemphasized, for it is the essence of the treatment and is often a lifesaving procedure. Prevent chilling by wrapping patient in blankets if necessary. Do not give alcohol in any form.

A. Do Not Induce Vomiting If:
   1. Patient is in coma or unconscious.
   2. Patient is in convulsions.
   3. Patient has swallowed petroleum products (i. e., kerosene, gasoline, lighter fluid).
   4. Patient has swallowed a corrosive poison (symptoms: severe pain, burning sensation in mouth and throat, vomiting).

      CALL PHYSICIAN IMMEDIATELY

      (a) Acid and acid-like corrosives: sodium acid sulfate (toilet bowl cleaners), acetic acid (glacial), sulfuric acid, nitric acid, oxalic acid, hydrofluoric acid (rust removers), iodine, silver nitrate (styptic pencil).

      (b) Alkali corrosives: sodium hydroxide—lye (drain cleaners), sodium carbonate (washing soda), ammonia water, sodium hypochlorite (household bleach).

If the patient can swallow after ingesting a *corrosive poison,* the following substances (and amounts) may be given:

For acids: milk, water, or milk of magnesia (1 tablespoon to 1 cup of water).

For alkalis: milk, water, any fruit juice, or vinegar.

For patient 1-5 years old—1 to 2 cups.

For patient 5 years and older—up to 1 quart.

B. Induce Vomiting When Non-corrosive Substances Have Been Swallowed:
   1. **Give milk** or water (for patient 1-5 years old—1 to 2 cups; for patient over 5 years—up to 1 quart).

V 16
1957

2. Induce vomiting by placing the blunt end of a spoon or your finger at the back of the patient's throat, or by use of this emetic—2 tablespoons of salt in a glass of warm water.

When retching and vomiting begin, place patient face down with head lower than hips. This prevents vomitus from entering the lungs and causing further damage.

II. *Inhaled Poisons*
1. Carry patient (do not let him walk) to fresh air immediately.
2. Open all doors and windows.
3. Loosen all tight clothing.
4. Apply artificial respiration if breathing has stopped or is irregular.
5. Prevent chilling (wrap patient in blankets).
6. Keep patient as quiet as possible.
7. If patient is convulsing, keep him in bed in a semidark room; avoid jarring or noise.
8. Do not give alcohol in any form.

III. *Skin Contamination*
1. Drench skin with water (shower, hose, faucet).
2. Apply stream of water on skin while removing clothing.
3. Cleanse skin thoroughly with water; rapidity in washing is most important in reducing extent of injury.

IV. *Eye Contamination*
1. Hold eyelids open, wash eyes with gentle stream of running water *immediately*. Delay of few seconds greatly increases extent of injury.
2. Continue washing until physician arrives.
3. *Do not use chemicals*; they may increase extent of injury.

V. *Injected Poisons* (scorpion and snake bites):
1. Make patient lie down as soon as possible.
2. Do not give alcohol in any form.
3. Apply tourniquet above injection site (e. g., between arm or leg and heart). The pulse in vessels below the tourniquet should not disappear, nor should the tourniquet produce a throbbing sensation. Tourniquet should be loosened for 1 minute every 15 minutes.
4. Apply ice-pack to the site of the bite.
5. Carry patient to physician or hospital; DO NOT LET HIM WALK.

VI. *Chemical Burns*
1. Wash with large quantities of running water (except those caused by phosphorus).
2. Immediately cover with loosely applied clean cloth.
3. Avoid use of ointments, greases, powders, and other drugs in first-aid treatment of burns.
4. Treat shock by keeping patient flat, keeping him warm, and reassuring him until arrival of physician.

Measures to Prevent Poisoning Accidents

A. Keep all drugs, poisonous substances, and household chemicals out of the reach of children.
B. Do not store nonedible products on shelves used for storing food.
C. Keep all poisonous substances in their original containers; do not transfer to unlabeled containers.
D. When medicines are discarded, destroy them. Do not throw them where they might be reached by children or pets.
E. When giving flavored and/or brightly colored medicine to children, *always* refer to it as medicine—*never* as candy.
F. Do not take or give medicine in the dark.
G. *READ LABELS* before using chemical products.

CHEMICAL LABORATORY

The Chemical Laboratory has authorized publication of the following statement.

WALTER WOLMAN, PH.D., *Director.*

Monographs of tests and assays for new and nonofficial drugs adopted by the Chemical Laboratory of the American Medical Association represent an expression of opinion as to what might constitute adequate tests and assays to serve as a reference guide to those interested in the identity and quality of a new and nonofficial drug.

Completed monographs are published in the journal *Drug Standards* for those interested in the details of the procedures. Monographs on the following drugs have appeared in the July-August, 1957, issue of that journal. The cooperation of the listed pharmaceutical firms that furnished samples and data is acknowledged.

Cyclizine.....(Burroughs Wellcome & Co., Inc.)
Cyclizine hydrochloride.(Burroughs Wellcome & Co., Inc.)
Cyclizine lactate.....(Burroughs Wellcome & Co., Inc.)
Meclizine hydrochloride(Pfizer Laboratories)
Mephentermine.....(Wyeth Laboratories)
Nylidrin hydrochloride...(Arlington-Funk Laboratories)

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RUBELLA AND PREGNANCY

FOR AT LEAST 15 years it has been known that if rubella was contracted early in pregnancy serious harm to the developing embryo might result.[1] Congenital malformations once thought to occur entirely by chance have more and more come to be recognized as a result of some maternal infection passed to the fetus through the placenta. Now, as pointed out by Greenberg and co-workers (this issue, page 675), many pregnant women and even some physicians believe that if rubella occurs in early pregnancy stillbirth or congenital malformation of the infant is inevitable. This impression is due primarily to two fallacies. Ingalls [1] pointed out that early studies were retrospective, starting with malformed infants and getting a history of the diseases the mother had in pregnancy. Such studies take no account of illnesses occurring during pregnancy in women who delivered normal babies. It now appears that many women have normal babies despite infections contracted during pregnancy. The other fallacy is that in many cases the diagnosis of rubella was not made by a physician. The mother thought she had this disease or something quite like it and was often vague about the exact time of its occurrence as related to her pregnancy. On the basis of such studies, the risk of stillbirth or congenital malformation was placed between 50 and 100% by some early observers. Later observers in the United States and Sweden estimated that if rubella occurred in the first trimester of gestation the risk of stillbirth was about 9.5% and the risk of congenital malformation about 7%.[2]

As pointed out by Pitt,[2] a prospective, as opposed to a retrospective, study should meet the following requirements: 1. Selection of cases should be made before delivery. 2. All mothers who contract rubella during pregnancy should be included regardless of the trimester of gestation in which the disease occurs. 3. Only those whose rubella occurred during pregnancy should be included. 4. Only those in whom the diagnosis of rubella was made by a physician should be included. 5. The outcome of the pregnancy must be recorded. 6. A control series should be observed. 7. A follow-up of the infants by an examiner who does not know whether the mother had rubella during pregnancy or not should be made. 8. A large enough series to be statistically significant should be studied. The last point presents some difficulty in the absence of an epidemic. In Ingalls' prospective series fetal death or congenital malformations resulted in 20% of the pregnancies of women who had rubella in the first trimester of gestation.

Ward and Parker,[3] using convalescent serum from rubella patients to treat women exposed to rubella during pregnancy, observed an attack rate of only 0.9% in these women compared with 10.8% in pregnant and 12% in nonpregnant controls. Although they cite others as finding gamma-globulin ineffective, they believe that if it is given early in the incubation period it offers enough protection to justify its use. One great difficulty in this regard is the fact that the disease is transmitted by persons who are in the prodromal stage and the pregnant woman often does not know she has been exposed, especially since the exposure may have occurred in a public place. The question of whether the pregnant woman who contracts rubella early in pregnancy should have a therapeutic abortion is a difficult one. The disease does not complicate labor, but there is great danger of serious psychic trauma if the infant produced is malformed.[4] The fact that the chances that the infant will be normal in spite of the mother's infection are much better than was formerly thought seems a valid reason not to interrupt pregnancy.

1. Ingalls, T. H.: German Measles and German Measles in Pregnancy, A. M. A. J. Dis. Child. **93**: 555-558 (May) 1957.
2. Pitt, D. B.: Congenital Malformations and Maternal Rubella, M. J. Australia **1**: 233-239 (Feb. 23) 1957.
3. Ward, H., and Parker, G.: Passive Protection Against Rubella, M. J. Australia **1**: 81-83 (Jan. 21) 1956.
4. Abramowitz, L. J.: Vaccination and Virus Diseases During Pregnancy, South African M. J. **31**: 1-3 (Jan. 5) 1957.

DRUG PROMOTION

Elsewhere in this issue of THE JOURNAL (page 657) is a thought-provoking article that undoubtedly will interest both physicians and drug manufacturers. It points to problems obviously disturbing to the author and presumably also to some of his colleagues. However, there are statements in the article that may cause confusion, even consternation, if they are taken out of context. This, of course, is a problem facing any author who can only hope his article will

V 16
1957

be read in its entirety so that misunderstanding of the intent of the message does not arise.

Drug manufacturing in the United States is unique. For years it has offered more benefits to patients of physicians than in any other country. It has contributed immeasurably to the welfare and economy of people in this nation and elsewhere in the world. It has supported research to the tune of millions of dollars, the exact amount never having been determined. Its directors have developed an increasingly deep sense of public consciousness. It has become indoctrinated in recent years to the meaning of medical science in a way that has resulted in even some of the country's best scientists joining the industry as researchers and consultants. And it operates under a combination of legal restraints and voluntary control that has been the subject of discussion in countries throughout the world.

Obviously this means that aggressive selling is certain to occur. In a free enterprise system such as exists in the United States where there is competition and a need for some return for shareholders one finds evidence of such selling in any industry whether it be the manufacturing of cars, appliances, clothing, or foods. The problems that arise in the promotional field stem usually from failure to distinguish between aggressive selling and permissible puffery on the one hand and downright deception on the other. So far as drug promotion is concerned a reassuring balancing factor enters the picture; it is the training and intelligence of members of the medical profession. They are taught from student days and through experience to study, observe, and criticize. Credit for this training should never be overlooked.

Most drug manufacturers are aware of the average physician's tolerance and respect it. If they fail to do this their shortsightedness becomes evident in studies and reports which flow across the desks of their executives. Some people in any field, of course, are interested solely in a "fast buck" and these, unfortunately, bring discredit to their colleagues. The majority, however, are not interested in marketing drugs that serve no useful purpose, as they are too difficult to sell profitably. Sometimes, though, these drugs are made available simply because they are requested by practitioners to meet special situations. Nor do they as a whole bring pressure on investigators to report only that which is favorable. A manufacturer who does this risks public condemnation at meetings. Nor are most manufacturers interested in help from inept investigators. Such help leads to difficulties from the time a new drug application is filed with the Federal Food and Drug Administration until it is marketed. And in reference to marketing, most companies who sell products intended only for prescription use are not anxious to carry advertising to the public. This has been tried a few times, and the spanking from the medical profession was promptly applied and obviously effective.

One of the problems of communication between announcement of a new drug and the distribution of unbiased comment on it has always been the question of time. To be of added assistance to the medical profession the Council on Drugs of the American Medical Association has developed an educational program evident in almost every issue of THE JOURNAL. The statements published by this Council are brief, concise, and clear, and if there is doubt in the mind of any physician about any drug he can always write to the Council office at A. M. A. headquarters for information.

There are times when a proposal is made for the development of laws to control practices that can be controlled by nongovernmental intervention. There already is an outcry against too much government regulation, and to permit practices that encourage more such control is in the long run suicidal economically and otherwise. Therefore, if the drug industry is erring in its aggressive selling it should police itself and not encourage a federal agency to assume this responsibility. In this respect it is interesting to recall the suggestion some time ago from representatives of the drug industry for a survey by the American Medical Association to determine how the industry can best serve the profession and to outline the areas of mutual interest and those in which problems may arise. This study, which is based on depth interviews, has been under way for several months and will not be completed for several more. Its possibilities, of course, are exciting to contemplate and its effects can be far-reaching. Important also, however, is the fact that an industry which has made so many contributions is anxious to learn how to make more. This is the way it should be in the American way of life.

ASIAN INFLUENZA AND THE MEDICAL SOCIETY

In this issue of THE JOURNAL (page 691) there appears the second comprehensive report of the American Medical Association Special Committee on Influenza. While the first report (THE JOURNAL, September 28, page 356) was directed primarily toward the individual physician, the present report is intended to be more of a guide to assist local medical societies in organizing their Asian influenza program. At the same time, it offers the means for the medical society to assume its share of the leadership in this particular preventive medicine program.

Despite all previous public press concerning a possible influenza epidemic, an occasion might well arise where local circumstances will necessitate supplemental health education, limited to a particular community or area. For example, local problems are apt to present themselves in regard to the closing of schools, whether certain local groups should receive priority immunizations, and especially how to treat oneself in an unusual home environment. These factors, and many others, should

be answered by unanimous agreement of all health groups rather than incidental opinions, and it is up to local medical leaders to coordinate such information before, not after, announcement is made to the public.

The second Special Committee on Influenza report attempts to prevent duplication of health efforts, as well as to prevent conflicting information from reaching the public. In disseminating health information, experience has proved that successful results are more easily achieved when the audience respects the reliability of the source. Integrated knowledge can not only prevent confusion but, moreover, can reduce morbidity.

THE PHILADELPHIA MEETING

The forthcoming meeting of the American Medical Association in Philadelphia will provide an opportunity for all members to learn first hand what their Association is doing on their behalf. It also offers an opportunity for others to observe how the medical profession through organized efforts is serving the public. Reports covering all phases of Association activity will be presented to the House of Delegates, and any member is welcome to attend the meetings of the House. In fact, all members are urged to attend.

Philadelphia as a convention city has much to offer. For those interested in sightseeing, for those with an interest in medical schools and hospitals, and for those with an eye for history, this city is well known. But, in addition, there will be today's modern medical concepts as revealed by leaders in all branches of medical life. And also there will be the occasion to review what the American Medical Association has done during 1957 and what are some of its plans for the future.

Time and time again people are heard to criticize something of which they have little personal knowledge. Or they are heard to complain about an action taken by their medical society but on questioning admit they have made no attempt to express their views to the society. The purpose of organizing into societies is to permit an exchange of ideas and to encourage cooperatively that which is good. All physicians should be members of their county, state, and national medical associations to share and benefit from a program for the exchanging of ideas. And they should not hesitate to express their views no matter how divergent they may seem to be. The views may not be in accordance with the expressed wishes of the majority, but at least they will have been aired and shared. But if a dissenting doctor does not even attend the meetings of his society, he cannot expect to exert an influential voice. Nor should his views be expected to weigh heavily with others if he seems to be so little interested in his colleagues that he does not wish to associate with them at medical meetings.

There are so many problems confronting medicine today that any meeting is certain to provide discussion on some topic of interest for all members of the profession regardless of their field of activity. Medical education, retirement plans, malpractice, medical care for the public and for the armed forces, civil defense crises, new treatments and diagnostic measures, visual aids, corporate practice of medicine, medical ethics, and other subjects too numerous to mention are discussed and discussed again and again at medical meetings. And they are now a part of the everyday life of the doctor, whether he be practitioner, administrator, teacher, or researcher, as they have never been previously. The doctor as an individual must be informed on what is new for him and his patient. And for his own good and for his patients' welfare he must know what problems are facing his profession as a whole. With such information he can better meet his obligations. Without it he may find himself in some embarrassing situations from time to time. The Philadelphia meeting is designed to focus attention on such areas of interest and to permit the Association as an organization to report to its members. Now it is up to the members to learn first hand some of the things they are receiving for their dues.

SOCIAL SECURITY FOR PHYSICIANS

The House of Delegates of the American Medical Association at the June, 1957, meeting reaffirmed its long-standing opposition to the compulsory coverage of physicians under the Old Age and Survivors Insurance provisions of the Social Security Act. The House also recommended a stepped-up informational program which would explain to every Association member the reasons underlying the policy on this issue.

To help carry out that directive, THE JOURNAL this week begins publication of a series of three articles on "Social Security for Physicians," which will be appearing in the Special Article section. This week's article, "The Old Age, Survivors and Disability Insurance Program (OASDI)," is on page 683. Part 2 of the series, entitled "Position of the Medical Profession Concerning the Coverage of Physicians Under the Social Security Act," will be in the October 19 issue. The October 26 issue will carry part 3, called "Survivorship Benefits—the Bait."

Although there are differences of opinion within the profession on this question, all evidence to date indicates that a majority of physicians agree with the Association's policy. However, during the past year or so the picture has been somewhat confused by the vigorous drum-beating efforts of the leftist Physicians Forum. It is hoped, therefore, that this series of articles—and subsequent material to be published by THE JOURNAL—will help clarify the issue and enable physicians to reach a clear-cut decision based on facts rather than propaganda.

V 16
1957

SPECIAL COMMITTEE ON INFLUENZA

ASIAN INFLUENZA—A SPECIAL REPORT TO MEDICAL SOCIETIES

The following report, prepared by a subcommittee consisting of Drs. Charles W. Steele, Chairman, Lewiston, Maine; David Henry Poer, Atlanta, Ga.; and Roscoe L. Sensenich, South Bend, is presented for the guidance of the medical profession by the A. M. A. Special Committee on Influenza and has been authorized for publication in THE JOURNAL.

FRANK W. BARTON, *Secretary.*

The success of any program designed to minimize the medical and health problems arising from an Asian influenza epidemic, should it materialize, will depend on the leadership and extent of participation of the medical profession. The public looks to the medical profession for this leadership in these emergency situations and American medicine wants a sound medical plan and an effective organization to meet the medical aspects of any epidemic. Experience has shown the infecting virus of Asian influenza to be highly contagious, accompanied by a rapid onset and high incidence or attack rate. For these reasons, the A. M. A. Special Committee on Influenza points to the fact that the ability of the medical profession to discharge its responsibilities in the event of an epidemic of this nature will depend largely on how promptly they have taken steps to plan ahead.

To assist medical societies in organizing the health resources of the community to meet the emergency requirements of an Asian influenza epidemic, the Committee feels that a review of some of the factors to be considered, together with suggested operational guides, might be helpful. In considering the problem in broad terms, the twofold objective of this report is (1) to assist in the formulation of medical and health plans that can be put into operation in the event an epidemic occurs and (2) to assist state and local medical societies in cooperation with official health agencies to plan a program that will achieve the highest level of vaccination possible, in accord with local priority plans, with the amount of vaccine available.

Many of the state and county medical societies have already prepared excellent plans and are otherwise actively engaged with preparedness programs. The Committee suggests that an exchange of programs and plans among states, as well as between constituent medical societies, might be of practical value in the coordination of activities, as well as in uniformity of action in special phases of the program.

The Special Committee on Influenza consists of Drs. Harold C. Lueth, Chairman, James Z. Appel, Cortez F. Enloe Jr., Carroll P. Hungate, Hugh H. Hussey Jr., Max L. Lichter, David Henry Poer, Roscoe L. Sensenich, and Charles W. Steele.

For the past two months, special articles have been published in THE JOURNAL on Asian influenza, and these articles will be continued. Promotional materials and guides are available through the U. S. Public Health Service to assist state and community groups in developing vaccination programs and operational plans.

Because the local health department is the link between the private physician and the state-federal-international reporting system, it is essential that this communication be immediate in order to provide rapid epidemiologic investigation, including laboratory confirmation, where influenza of any type is the tentative diagnosis. Equally as important as the supplying of information to the local health officer is the reciprocal opportunity of receiving up-to-the-minute data from the epidemic intelligence service, which is part of the public health make-up. All public health officials receive regular reports from state and federal sources, and these reports include the locations of individual cases, outbreaks, and most important the exact diagnosis, if and whenever confirmed. A unique part of this service is the notifying of local health officials whenever persons, usually returning from overseas and known to have been exposed to Asian influenza, are returning to their community.

The Committee recommends that each state, county, and local medical society give consideration to:

1. The formation of plans for complete mobilization of all health resources at community level to cope with the impact of influenza epidemics on normal professional services and health facilities. In general, it will be an augmentation of existing services to meet the anticipated epidemic.

2. An estimate of anticipated morbidity, duration of the epidemic, and number of persons ill at the same time, using available experiences and indexes.

3. A forecast of the number of patients that could be treated at home and those requiring hospitalization.

4. A plan for expanded professional care through the utilization of all medical personnel, regardless of type of practice. Action to make full use of hospi-

tal facilities, likewise, should be explored, such as curtailment of elective surgery, diagnostic studies, etc.

5. A determination of effective mobilization plans through the use of surveys of hospital resources, physicians, nurses, and other allied medical personnel, and other means.

6. An assurance of the full utilization of other community services and facilities, such as home nursing care, homemakers service, first aid and care to the sick, to supplement the care needed for all persons in the home and to relieve the demand on hospitals.

7. The possible use of FCDA emergency supplies and equipment and other civil defense planning.

8. A system for the dissemination of epidemiologic information to local physicians available from the Public Health Service on the total national situation and also on a state-by-state basis. A program of epidemic reports by counties to the state and, in turn, reports to the Public Health Service that could be made available to physicians would be ideal.

9. A means for the utilization of a diagnostic laboratory system for the collection of specimens of nose and throat washings and blood samplings to establish the epidemiology of the disease. Technical information on securing, preparing, and forwarding of specimens to the laboratory should be disseminated through state health department channels to insure reliable tests and uniformity of laboratory data that would indicate the presence or spread of the disease. This phase of the program is of tremendous value early in an epidemic. Once an epidemic has started, further laboratory tests are no longer essential.

10. The closest coordination of state and local medical programs with public health agencies and state and local health officials is of utmost importance. There should also be effective cooperation between the health and medical groups and all other related community activity.

11. The admission to hospitals of those persons with influenza with complications or those that constitute a special medical problem or risk. The Committee feels that maximum reliance should be placed upon home care of uncomplicated influenza cases.

12. An informational and educational program to acquaint the public with factual information as to what to do and what to expect. The public should be reassured that there is no cause for alarm concerning an influenza outbreak in view of the fact the illness is of short duration, it is generally mild and with few complications, and it has a very low mortality rate. Emphasis should be made concerning the close cooperation among national, state, and local health and medical groups in the formulation and operational plans to cope with the problem.

Local groups working together can evolve an effective action program, operationally and informationally. The Committee feels that the possible magnitude of the problem warrants serious attention of local medical societies well in advance of any epidemic outbreak. Too little or too late could be disastrous, even though it is recognized that some portions of the program may never be used. Local medical societies must give the type of leadership in this matter that the public expects. Even if the Asian influenza epidemic should never strike, the public and the profession would gain by this type of organization: first, in health education; second, in drawing people in the health groups together to form an effective action group which could meet special emergency health problems; and, third, it could serve as an actual working experience in medical disaster situations, due to either natural or war conditions.

Realizing that some misunderstanding has probably resulted in the widespread dissemination of information with reference to the vaccine program, the Committee takes this opportunity to briefly review the achievements in the manufacture, production, and distribution of Asian influenza vaccine.

The progress which has been made in the development of a vaccine containing the Asian strain has been significant and noteworthy, if not phenomenal. The first strains were provided to the manufacturers on May 22; the first vaccine was released for general use on Aug. 12, and each succeeding week since that date increasing lots of the vaccine have become steadily available. It is anticipated that some time in October a maximum weekly production rate of 5 to 7 million cubic centimeters will be reached by the six manufacturers who have been licensed to produce the vaccine.

According to Public Health Service reports, a production goal of 85 million cubic centimeters by January, 1958, is the present estimate of supply potential. As of Oct. 1, a total of 13,502,947 cubic centimeters of the vaccine had been released for civilian and military use. Of this amount, the military departments received 4,015,700 cubic centimeters, and it is anticipated that by the end of October most of the members of the armed forces will have received the first of two scheduled inoculations. The remaining 9,487,247 cubic centimeters has been released through the usual commercial drug channels for civilian use. When maximum production goals are reached in October, it is estimated that approximately 20 million cubic centimeters or more per month will be available for distribution.

A polyvalent preparation containing an Asian and other strains of virus, no doubt, would be the ideal vaccine; however, the monovalent Asian strain virus has been accepted in order to facilitate production and to provide as large a volume as possible for im-

V 16
1957

munization. Present requirements call for an antigenic virus mass of 200 CCA (chick-cell-egg agglutination) units per cubic centimeter. Past experience, according to the Public Health Service, has indicated that a single injection of influenza vaccine is about 70% effective. The actual effectiveness of the Asian influenza vaccine cannot, of course, be established as yet. Protection develops in 10 to 14 days and lasts approximately one year.

The Public Health Service has undertaken a vigorous campaign to urge maximum public use of the vaccine just as rapidly as supplies become available. Dr. Leroy E. Burney, Surgeon General, U. S. Public Health Service, noted, "there will not be enough time, of course, to produce and administer sufficient vaccine to immunize a majority of the population before the influenza season. However, the vaccine is the only known preventive and we want to make the best use of it we can."

The Public Health Service, in cooperation with the American Medical Association, is encouraging a nationwide voluntary program of vaccination against the prevalent strain of influenza. The Public Health Service will not request federal funds for the purchase or administration of the vaccine, except for its own legal beneficiaries. Community resources, both public and private, should be encouraged to provide for persons who are unable to pay for such protection.

At the suggestion of the Public Health Service, a voluntary interstate allocation system for the distribution of the vaccine has been worked out by the manufacturers to assure an equitable availability of vaccine supplies throughout all parts of the country. The voluntary system is patterned along the following lines:

1. Each state would be entitled to shipments of a percentage of vaccine produced by each manufacturer equal to the percentage which that state's population bears to the total population of the United States.

2. Out of each week's vaccine production, manufacturers would establish for each state a quota of vaccine equal to the state's percentage entitlement.

3. Vaccine manufacturers would limit their sale of vaccine in each state to the quota established for that state.

4. Manufacturers would report weekly to the Public Health Service the net amount of vaccine released for sale that week and, on a state-by-state basis, the amount shipped into each state in terms of amounts shipped to public agencies and to other purchasers.

5. The Public Health Service would maintain data from the states regarding the adequacy of available vaccine supplies under this system and would recommend modifications in the quotas if it appeared that supplies were exceeding demand in some states.

Dr. Burney reported that under this system the Public Health Service would not contemplate any allocation between public agency purchasers and commercial sales.

Whenever a vaccine is in short supply and the demand is great, it automatically creates problems of allocation and priority. How each state's share of its vaccine will be distributed is another aspect of the problem. The State and Territorial Health Officers, in a meeting on Aug. 28, recommended that priority be given to:

1. Those individuals whose services are necessary to maintain the health of the community.

2. Those individuals necessary to maintain other basic community services.

3. Persons with tuberculosis and others who in the opinion of the physician constitute a special medical risk.

In endorsing this priority recommendation, the A.M.A. Special Committee on Influenza suggests that state and local medical societies should consider the application of these recommendations on the basis of local conditions and situations. Local county medical societies should take the initiative in the organization of local advisory committees, composed of physicians, health officials, and representatives of other health groups, voluntary agencies, and civic organizations. Such local advisory committees would depend upon the local organizational plan adopted for their membership. They should be established to determine and recommend how the distribution should be made and in what order groups should receive it. Additional groups and categories should be added to the priority listing as the quantity of the vaccine is increased. It is highly desirable for individual physicians to adhere to locally established priorities under free and voluntary cooperative arrangements. Local advisory committees should publicize among the medical profession the priority system adopted and the basis for such determination. Industrial concerns, schools, and other special groups will also be guided by the recommendations established by local priorities. At the same time, an intensive public educational program should be instituted concerning the state vaccine allocation and priority program. This alone should relieve some of the pressure and clamor from individuals to their physicians for the vaccine.

In suggesting factors for consideration in the formulation of operational plans in the event an epidemic occurs, the Committee realizes that each state and each community will have to develop its own program within the framework of local practices, conditions, and resources and the particular difficulties confronting the community. The Committee visualizes the problem as basically a local one which can be met only by a carefully designed program tailored to local requirements with local health and medical groups working together in a team approach.

COUNCIL ON MEDICAL SERVICE

THE SENIOR CITIZEN AND HIS COMMUNITY

Frederick C. Swartz, M.D., Lansing, Mich.

This is the eighth of a series of papers on various aspects of aging. Each paper has been prepared for the Committee on Aging by an authority in the field. When completed, the series will be published in booklet form.

In every community, whether large or small, there is an increasing number of people being looked upon as senior citizens. A generation or two ago this group was not so large. The small community odd jobs and farming activities took care of many of those who could work. The family philosophy of being responsible for their own took care of a large part of the remainder.

As a "problem" the oldster did not present the urgency that is thought to be there today. In a community which throbs along at the relentless rate set by an atomic age, there is little sympathy or feeling for one who allegedly cannot keep the pace. We who have conquered the atom have not solved the challenge of being able to live one with the other. We are adept at recognizing differences that permit us to set groups apart and at discussing their special needs as problems; but what about those similarities which make us all brothers under the skin whether we are young or old, white or colored, religious or nonreligious.

The very title of the paper implies an ideal that the Committee on Aging might well strive to solve. The term "senior," besides indicating advanced age, carries with it the connotation of being advanced in accomplishments, dignity, rank, and office as well. It will be the responsibility of the aged of the future to possess these attributes. A citizen is a member of a free community and, in return for his loyalty and allegiance, is accorded protection of life, liberty, and property as well as the right to vote and speak regarding the affairs of government. The comunity then, for our purpose, is a number of citizens with a common organization and/or interest who live adjacently.

The real content of this paper, however, has to do with the people who are over 65 years of age and their relationship to the community in which they live. It does not take too much of a study to bring out the fact that far too many of the senior citizens have but one characteristic in common, and that is their age. The advanced accomplishments, dignity, rank, and office seem to have been lost somewhere. The interest in environment, motive for living, and the sense of belonging seem to be hardly worth the effort. Neglect of personal appearance, chronic complaining, and failure to keep mentally alert limit the horizons of personal association. Any exaggeration of these defects changes sympathy and understanding to neglect and disgust and provides motives for the segregation of aged in homes and institutions.

Allegiance and loyalty are still expected of the senior citizen by the community. The protection of life, liberty, and property become a mockery to many in the face of enforced compulsory retirement which denies the oldster that right which gave his whole life meaning prior to the age of 65—and that is the right to work.

In any labor market there is a sizable number of workers who have, for various reasons, never stayed long enough in one place to take root. These constitute the bulk of those who find it more and more difficult to get jobs as they approach 65 years of age. If the truth were known, they are largely the ones who would have difficulty getting employment on a tight labor market irrespective of their age. These should not constitute a part of the so-called problems of the senior citizens.

In this latter area, we have a totally different challenge. The rising cost of supporting the aged in retirement; the recognized value of the older worker from the standpoint of efficiency, spoilage, absenteeism, and loyalty; and the recognized wastefulness occurring when human resources are squandered at the age of 65 make us view with grave doubts the present concept of compulsory retirement. It is the responsibility of the community and of industry to provide work for those who are willing and able. This concept is so very ably expressed by President John Erik Jonsson of Texas Instruments Incorporated when he says, "Never hire anybody you don't expect to keep the rest of his working life." It is the responsibility of the aging worker to realize that he has been and will continue to be a member of a society that wants and needs what he has learned through his years of effort. An adequate earned income is certainly the right of every member of a community. Even in the aged group this should be commensurate with his contribution and certainly should be larger than that provided by the usual retirement allowances plus social security.

Member of the Committee on Aging of the American Medical Association and Chief of the Section of Medicine, E. W. Sparrow Hospital.

V 16
1957

Much is made of the concept of there being no place for the oldster because of his failure to keep pace in the production line. But what good is a production line without the consumer! Henry Ford must have realized this a number of years ago when the automotive industry was in its infancy. He envisioned the great productive lines of the future as the inevitable result of progress. His contribution to the industrial problems of the day was not to find more leisure for the individual who is not trained to use it in the first place but to provide more units of his product at a cost within the reach of all. When this did not quite occur, he raised the daily wage of every member of his factory to $5 a day, an unheard of figure in those days. Instead of causing an economic collapse, it provided improvement in living standards of his employees as well as a greatly increased market for his automobiles. The great army of the retired which will grow larger with each advancing year is lost to the market because of inadequate income at the present time. Continued employment permits incomes above the usual retirement level and provides consumers with adequate funds to stimulate production.

Community planning and growth should take into consideration the needs of its older citizens. Some groups cling to the idea that these should take the form of a community for the aged within a community. Large multiple dwellings make it possible for similar needs to be met in group fashion. This is largely the approach observed in the so-called welfare state. There are several establishments of this variety being tried in the United States but with a somewhat different atmosphere. Fraternal, labor, or religious ties form the basis for this type of housing care. As nonsegregation becomes more prevalent, it is hoped that discrimination against the aged will become less articulate and the oldster will be able to take his place as a senior citizen and live and work in any part of the community he wishes. This privilege should continue until, because of either health or will, retirement becomes the course of choice. The future may still prove that a closer association of youth and age can be extremely beneficial to both.

Because of the decrease in infant mortality, and because many epidemic and endemic infections have practically disappeared from the scene, an increasing number of people are living to advanced years, and the profile of medicine has accordingly changed greatly. More opportunity exists for the application of theories of preventive medicine in an effort to further eliminate man's illnesses. More long-term illnesses also exist, especially among the aged, which make us review all our present methods of caring for the sick. Adequate medical care must be provided to keep the well oldster well; to keep the marginal oldster from becoming sick; and, when the oldster gets sick, to provide for his acute illnesses. The facilities of hospitals should be available as long as necessary in cases of acute illness, but then hospitals for chronic cases, rehabilitation centers, and convalescent nursing or old age homes are needed to complete the total care of the patient.

In summary, it seems that we are merely asking that the citizen who is entitled to vote and speak in his community be more advanced in dignity and standing and attainments and that his community recognize anew that the rights of citizenship be not abridged because of age.

BUREAU OF INVESTIGATION

BIMINI FUÉ DESCUBIERTO!!

IS "PEGA PALO" THE ANSWER?

According to the natives (and Webster, incidentally), Bimini was a fabulous island said to belong to the Bahama group, on which was located the Fountain of Youth.

When "el conquistador" Juan Ponce de Leon heard this, being a man of action, he took his company of Spanish adventurers and started out in earnest to claim it for the glory of Spain, and possibly to take a drink or two himself. Instead, the poor man discovered Florida. But there he found such an inhospitable group of natives that neither did he locate the Fountain nor did he get to build any fabulous hotels. Instead, he withdrew, mortally wounded, to Cuba.

This, of course, happened quite a few years ago. But legends such as this are extremely difficult to suppress, particularly when they have such an appeal, especially to the male of the species. This phenomenon was noted in THE JOURNAL in a report wherein Hess and his associates[1] observed, "The middle-aged man deplores his waning manhood and wants something done about it. He accepts the fact that he can no longer play a set of tennis or stay up all night at a party, but he will not gracefully accept his diminishing sexual vigor."

The verity of this observation is widely known, apparently. A lay publication which frequently devotes its columns to things sexual, and occasionally to things medical, published an article in a recent issue on the subject of "Pega Palo," a "vine that makes you virile." It was stated therein that the vine is native to the Dominican Republic and found only there, that the natives had used it for centuries, and that men of 80 acted like men of 30.

Although the island of Hispaniola (containing Haiti and the Dominican Republic) is not one of the Bahamas, it is near enough to provide a worthy locale for the discovery of such an important commodity. It goes without saying that the magazine enjoys wide circulation. A good many readers started casting about for a means to acquire the

answer to their individual problem. A number of these persons, and perhaps others, wrote to this Bureau for information.

Pega Palo has been described to this Bureau variously, from a botanical standpoint. The Chicago distributors furnished the name Rhynchosia serpentine and later Paullinia sorbilis or cupana. Another source furnished indication that the vine is Rhynchosia pyramidalis. So far as is known, no active plant principle under any of these designations has been isolated or identified or been demonstrated to have any effect whatever as a drug.

It has been reported in the daily press that visitors to the Dominican Republic could obtain the material in hotels and gift shops and that Pega Palo had been processed into a concentrated liquid form, obtainable in very small bottles, for $3.50 to $5.00. Enterprising Americans, however, obtained quantities of the vine itself, and these were soon on the market, sold by mail for $15 for a cut of the vine approximately 8 in. long. In lots of eight, the bargain rate was $75. Purchasers of the vine were instructed to immerse it in a bottle of liquor—rum, bourbon, or whatever the purchaser had handy. After allowing the vine to "steep" for approximately eight days, the user should start with a 2-oz. "shot," and then continue according to his needs.

For obvious reasons, both the Federal Food and Drug Administration and the Post Office Department fraud division took umbrage, and each proceeded according to the laws it is obliged to enforce. The FDA has caused federal seizures of no less than nine lots of Pega Palo vines, charging misbranding by claims that the product is an aphrodisiac and that the labeling failed to bear adequate directions for use, and, further, that the sellers had failed to file a New Drug application. Such actions took place in federal court in Albuquerque, N. Mex.; Brooklyn, N. Y.; Chamberlain, S. D.; Chicago; Elyria, Ohio; Salt Lake City; and Yakima, Wash. Five of these cases have been closed on default decrees of condemnation and destruction. The four other cases are still pending.

The Post Office Department has announced the issuance of fraud orders against the Pega Palo Importers, Inc., the Roberts Company, the Lavergne Sales Company and Lavergne Sales, the Herbert Sales and the Herbert Sales Company, and the David Sales Company, all at Chicago. These fraud orders were dated June 19, 1957. Another, dated July 1, 1957, was issued against the B & E Distributing Company, at (of all places!) Bountiful, Utah. There is indication in the trade press that other fraud orders are in process.

Not so, however, with "Tintura de Pega Palo Fortidom," apparently now available on prescription as an experimental drug! The Bureau recently had occasion to confess its lack of knowledge on the subject of the Tintura (which appears to be a liquid extract), particularly as to the manner in which it is offered to physicians under an experimental program.

Recently, however, one physician quoted from a letter that he had received from a firm in Texas, in part as follows:

> . . . Tintura de Pega Palo Fortidom will not be available for personal use except through physicians until we have completed the investigational stages which we anticipate will be from eight to twelve months.
>
> It is preferred that the Tintura be mixed with a beverage of low alcoholic content such as wine. However, it may be mixed with soft drinks, milk, fruit juices, etc. It is intended that six tablespoons of the one to five mixture be taken three times daily for the first two days, resulting in the patient absorbing one and one-half tablespoons of Pega Palo the first day and one-half tablespoon the second day. Thereafter he should take a total of six teaspoons three times daily of the one to five mixture, resulting in his absorbing a total of three teaspoons of Pega Palo daily.
>
> We sincerely appreciate your interest and hope that you will decide to assist us in this project, as we have had a number of inquiries in G - - - - - -.
>
> Tintura de Pega Palo Fortidom can be furnished to you at $192.00 per gallon, which is $1.50 per ounce, or $50.00 a quart. It has been suggested that the patient be charged $3.00 per ounce, plus the regular charge for an office call, and that the patient be furnished from six to eight ounces at a time. However, this is entirely between the doctor and his patient.

From the above, it would not appear that the chief concern of the distributor is the obtaining of persuasive data to establish safety for use, the sole reason why new drugs are subject to testing under the federal act. This looks more like a sure-fire business proposition! A doctor who would participate in such a program would be obliged to tell his patients that their role as guinea pigs is in a rather nebulous field; they would be taking a product without identified drug properties!

Obviously, serious medical investigators would feel a lack of challenge in the premises, particularly when they are dealing with a preparation described by the "Tintura" promoters as "a product of *Nature* compounded with exacting care to enhance the *natural* zest for living." (It appears reasonable to assume that the Tintura de Pega Palo Fortidom is essentially the same as the Pega Palo vine now contraband in interstate commerce.)

But, assuming that there is reason to doubt the power of this alleged member of the Rhynchosia family to accomplish its Biminian purpose, there is, in a more recent issue of a magazine of similar character (identity unknown), an "exclusive" from Peru. This one is "Chuchiwasi," "the drink that can increase your virility." Again the reliance is on an alcoholic vehicle—which may account for the whole promotion.

Reference

1. Hess, E.; Roth, R. B.; and Kaminsky, A. F.: The General Practitioner as Urologist, J. A. M. A. **144**:601-605 (Oct. 21) 1950.

V 16
1957

MEDICINE AND THE LAW

AUTOPSY

This is the last in a series of six articles dealing with the necessity for and proper format of certain medicolegal forms. The subjects to be covered are (1) consent to operations and other medical procedures; (2) patient's right to privacy; (3) confidential communications and records; (4) artificial insemination; (5) the physician-patient relationship; and (6) autopsy.

This material has been prepared and will be published in book form by the Law Department of the American Medical Association under the title "Medicolegal Forms with Legal Analysis." The book will include extensive legal citations and a substantial number of additional forms which have not been included in this series of articles.—Ed.

After the death of a patient, his right to freedom from interference automatically passes in a modified form to his spouse or to his next of kin, and any unauthorized interference with his dead body exposes the offender to a suit for damages by the person entitled to its custody. One who participates in an autopsy to which the surviving spouse or next of kin has not consented and which is not authorized by law is also subject to criminal prosecution.

Generally, the person entitled to possession of a body for purposes of burial is entitled to authorize an autopsy upon it to determine the cause of death. The right to the body, and the attendant right to give or withhold consent to an autopsy, does not vest in the executor. The right vests in the surviving spouse, providing he or she was living with the deceased at the time of death in the normal relations of marriage. If the surviving spouse is not living with the deceased at the time of death in the normal relations of marriage, or if the surviving spouse waives the right, it will vest in the next of kin. So long as the surviving spouse asserts her rights to the body and does not abuse it, the next of kin have no rights with respect to the body and have no cause of action for the performance of an unauthorized autopsy on it. If there is no surviving spouse, the right vests in the next of kin, in order of kinship. Under such circumstances, a child of the deceased has rights superior to those of anyone else, unless it be the coroner or medical examiner. If the deceased is not survived by a child or children, authority over the dead body normally vests in the parents. It is not clear in those cases where the deceased child is a minor whether the consent of the father only is sufficient or whether the consent of the mother is also necessary. If the parents of the deceased minor child are divorced or separated, consent to the autopsy should be obtained from the parent who has custody of the child. In the absence of a child, children, or parents, authority over the dead body normally vests in brothers and sisters and so on through various degrees of consanguinity.

There are statutes in some states which provide for the order of the right to control of a dead body. The law has not undertaken to fix the relative rights of persons of equal degree of kinship, that is, the relative rights of several children, or of several brothers and sisters, and so on. Generally, it will be found that some one of a given group of children or brothers and sisters will be at the place of death and will assume charge of the body and it is to such a one that application should be made for permission to perform an autopsy.

In Wisconsin, there is a statute which provides that whoever of the near kin assumes custody of the body for burial purposes may give permission for autopsy. A Kentucky court has held that a physician is not liable where, without the consent of the relatives of the deceased, he performs an autopsy to determine the cause of death in order to comply with a statute which requires the physician's certification as to the cause of death. However, this does not appear to be the general rule.

The deceased may have left directions that an autopsy should be performed on his body. The trend of the American cases is to honor the deceased's directions as to the disposition of his body. There are statutes in a number of states providing that a person may, in his lifetime, direct what is to be done with his body after death. With the exception of the California statute, these provide that the authorization must be in writing; under the California statute, the direction must be in writing only if it directs that the remains are to be given to a teaching institution or hospital. In some states the workmen's compensation commission is permitted to order an autopsy when it is claimed that death resulted from an occupational cause. Sometimes an insurance policy will permit an autopsy and, in states recognizing such consents, the physician acting under such authority will be protected.

Authority of Coroner

In all jurisdictions, a public official, known either as the coroner or medical examiner, has legal authority to perform autopsies with respect to deaths

due to other than natural causes. When death is due to violence or casualty or there is reasonable ground for believing that it has been caused in that way, the right to custody of a dead body vests immediately in the coroner or the medical examiner. When the coroner or medical examiner has legal control of a dead body his authority is supreme. He is entitled to the body in the condition in which it was at the moment of death. In general, he is authorized to perform or procure an autopsy on any body coming into his lawful custody.

It is, therefore, important that a physician should not undertake to perform an autopsy without the consent of the coroner or medical examiner in any case in which the body is properly within jurisdiction of such officer, even though the surviving spouse or next of kin may have consented. If the coroner or medical examiner authorizes the performance of an autopsy on a body which is not within his jurisdiction, he and those who perform the autopsy at his direction are liable to the surviving spouse or next of kin. Therefore, it is equally important for the physician that he undertake to perform no autopsy on the basis of authority from the coroner or medical examiner unless he is sure that the officer has jurisdiction over the body and power to authorize the autopsy. Where the jurisdiction of the coroner or medical examiner is doubtful, consent should also be obtained from the surviving spouse or next of kin.

Limitations on Autopsy

All autopsies must be performed in a manner which shows decent respect for the body. In the absence of a specific restriction, consent to an autopsy by implication authorizes the physician to conduct it in the usual and approved manner practiced by the profession and to remove for examination and study such parts as must be examined and studied in order to accomplish the purpose of the autopsy. However, authority to remove parts or organs for study and examination does not, in the absence of a specific agreement, include the authority to retain them permanently. If there is no specific authorization for retention of organs or parts of the body, those that have been removed must be replaced in the body cavity before interment. The person who has the right to authorize an autopsy has the right to state the limits within which it shall be performed, and the autopsy must be performed strictly within those limits.

Form of Consent

A number of states have statutes which provide that consent to an autopsy must be in writing. Although a nonwritten consent may be legally sufficient in some states, a physician should not perform an autopsy without having first obtained a specific written consent or authorization which he can produce as proof in the event of a subsequent challenge to his authority. As with consents to surgical operations, the consent to autopsy should be specific rather than general. If it is necessary or desirable to remove and retain parts of the body for further study and examination, even though they be but minute sections for microscopic study, specific consent should be obtained. Although it has been held that a physician may lawfully perform an autopsy under consent obtained in his behalf by some other person, the physician may best protect himself by personally obtaining the consent from those authorized to give it.

FORM 1.—*Authorization for Autopsy*

NAME OF DECEASED.....AGE.....SEX.....

RACE.....MARITAL STATUS.....DATE OF DEATH.....

1. I hereby authorize Dr....., and such persons as he may designate, to perform and attend a complete autopsy on the remains of..... for the purpose of determining the cause of death. Authority is also granted for the preservation and study of any and all tissues or parts which may be removed. This authority shall be limited only by the following express conditions: (e. g. "limited to abdomen," etc.).....

.....

2. It is understood that due care will be taken to avoid mutilation or disfigurement of the body.

3. This authorization is given with the understanding that no charge will be made and that I will be informed of the results of this autopsy.

Signature of next of kin.....

Address.....

City and State.....

Relationship to the deceased.....

Signature of Witness.....

Address.....

City and State..... Date.....

Note. Next of Kin: For the purpose of this form the surviving spouse shall be considered the next of kin. In the absence of a surviving spouse, the next of kin shall be identified in accordance with the applicable State law.

FORM 2.—*Authorization for Tissue Donation*

To Dr.....:

1. You are hereby authorized to remove the following tissues:..... (Insert: bone, artery, cartilage, skin, fascia, dura, ...from the remains of nerve, tendon or eyes as desired.)

....., for donation of the aforementioned tissues to..... Authority is also granted to use the removed tissues in grafts upon living persons, or to otherwise dispose of these tissues in accordance with customary medical practice.

V 16
1957

2. It is understood that due care will be taken to avoid unnecessary disfigurement of the body.

Signature of
next of kin.....

Address.....

Relationship to
the deceased.....

Signature of witness..... Date.....

Address.....

City and
State.....

Note. Next of Kin: For the purpose of this form the surviving spouse shall be considered the next of kin. In the absence of a surviving spouse, the next of kin shall be identified in accordance with the applicable State law.

FORM 3.—*Consent to Disposal of Dead Fetus*

Date.....

We hereby authorize and request..... to preserve for scientific purposes, or to dispose of, the dead fetus or the body of the baby born to..... on....., 19....., in accordance with customary medical practice. All claims to the body are hereby relinquished.

Signed.....

Signed.....

Witness.....

Note. This consent should be executed by both parents, except that in the case of an unmarried mother her consent is sufficient.

MEDICAL-LEGAL PROBLEMS AND THEIR SOLUTIONS

In any discussion of medicolegal affairs it is advisable to reflect initially, if only briefly, on the fact that within the last 30 years the practice of medicine has become an increasingly complex undertaking, and during that period there has been a corresponding increase in related legal problems. The legal aspects of the patient-physician relationship have been complicated by many changes, including the practice of dividing the responsibility for the diagnosis, care, and treatment of patients with other physicians; the advent of group practice, of health insurance, and of contract practice; the growing number of circumstances in which the physician examines but does not treat, as in the examination of insured persons, of employees, of school children, of claimants of pensions, of claimants of damages for personal injury, and of persons accused of crimes; the increase in the number of physicians employed on a part-time or full-time basis; and the increase in the number of patients cared for through charity or by public funds.

Medical Professional Liability

Certainly one of the most important examples of legal complications in medical practice involves the subject of medical professional liability. Although not a new problem, it has, through a combination of recent circumstances, demanded an inordinate amount of attention from individual physicians and medical organizations. Some of the causes for this increased emphasis are the tendency of the public to seek financial remuneration for real or imaginary damage; the increasing tendency of juries to award more frequent and higher judgments; and inflation, necessitating higher payments for claims, judgments, and defense. The unfavorable articles in lay magazines dealing with the increased costs and medical care in general have created antagonism against the physician, while the favorable articles on new drugs, methods of treatment, and modern miracle surgery have in some instances been sufficiently exaggerated to lead the public to believe that a less than perfect result must be evidence of negligence.

What exactly then does the law require of a physician? It requires that when he undertakes to treat a patient he must possess and exercise the degree of knowledge, skill, and care commonly possessed and exercised by other reputable physicians in the locality. If he holds himself out as a specialist he must meet the standards of the specialist in his chosen field. He must keep abreast of progress in his profession and utilize standard and accepted methods and procedures in diagnosis and treatment. He must act with the utmost good faith toward his patient at all times. Of course he may not touch—certainly not operate upon—the patient without valid authorization. Further, his legal duty is not affected by the fact that his professional services are rendered gratuitously.

In a comprehensive report [1] prepared in 1941, Dr. Hubert W. Smith attempted to define the fundamental principles on which the legal status of the varied problems of medical professional liability must be determined. In his report he has outlined a rationale rather than a mere catalog of legal decisions.

In a more recent study [2] of the original sources of the law of professional liability, Dr. Andrew A. Sandor of California has analyzed all of the appellate court cases in the United States in the field from 1794 through 1955 with the exception of those resulting from counterclaims. His study shows not only the increased incidence of professional liability cases but also the areas of medical practice most vulnerable.

As impressive as Dr. Sandor's figures are with respect to reported cases, it must be remembered that they reflect only a small fraction of the claims and suits filed each year against physicians. In

some localities the likelihood of being sued is now so great that the practicing physician must recognize that it constitutes a definite occupational hazard. The incidence of professional liability claims has increased substantially during the past 20 years and the situation continues to grow worse. If this situation were evidence that the medical profession is becoming increasingly inefficient, then the solution would of course be obvious. But the blunt truth is that the majority of all professional liability claims and suits filed are without merit; more than half of them involve physicians who are above the average of their respective groups in skill, experience, and professional standing. So frequent are these claims that in some localities any patient with a less than perfect end-result is a potential claimant. If physicians were always able to obtain perfect results there would, of course, be no problem. But deaths, untoward and unexpected results, continuing disabilities, and complications occur and will continue to occur. There is always a chance that without any negligence on the part of anybody some unfortunate result, sometimes fatal, will happen.

If the present trend continues and if a physician must become increasingly apprehensive of legal suits, his own aggressive instinct will inevitably in some measure overcome his humanitarian and professional motivations. Such a doctor will be inclined to give too much time to protecting himself and less to the care of his patient. He may hesitate to assume responsibility in a case where the prognosis is poor. He will have a tendency to omit the highly successful, but slightly dangerous, medical procedures. Whether medically indicated or not he will exhaust every possible established, laboratory aid in every case; he will, on the slightest indication, bring consultants into the case; he will prefer to keep the patient a longer time in the hospital than is necessary. By these means, although the cost to the patient is increased, the hazard to the attending physician will be reduced.

The great number of these claims and suits will inevitably have another undesirable effect. They will cause a lowering of professional prestige and mutual mistrust between the patient and his physician. This is distinctly detrimental to the patient. When a patient feels a positive assurance that he is in safe hands, the solace he gets favorably affects his rate and chances of recovery. Emotional relief plays a substantial part in the healing of organic disease.

The honest, capable, conscientious physician must also have assurance that as long as he is doing a competent job he is not going to be harassed by unfounded litigation.

Res Ipsa Loquitur

It appears that the principle of *res ipsa* was first recognized in England in 1863 in a case [3] in which a barrel rolled out of a warehouse window and fell on a passing pedestrian. Justice Holmes, while on the bench of the Supreme Judicial Court of Massachusetts defined the doctrine as follows [4]:

> "Res ipsa loquitur," which is merely a short way of saying that, so far as the court can see, the jury, from their experience as men of the world, may be warranted in thinking that an accident of this particular kind commonly does not happen except in consequence of negligence, and that therefore there is a presumption of fact, in the absence of explanation or other evidence which the jury believe, that it happened in consequence of negligence in this case.

Without questioning the doctrine as it has been applied in the past and as it is still applied in most jurisdictions, consideration must be given to the recent tendency in some courts toward extending a perversion of the doctrine into the professional liability field to the detriment of the defendant-doctor and the public.

One of the California *res ipsa loquitur* cases is *Ybarra* v. *Spangard*.[5] In this case, the court went a long way in applying this doctrine. This case among others is commented on in an article [6] published in the March 23 issue of THE JOURNAL. In his comment on the court's opinion in this case, Mr. Morris, a Cleveland attorney, says:

> The language of this court's opinion leaves no doubt but that it is applying not *res ipsa loquitur*, but the "rule of sympathy" version. The court sympathizes with the unconscious patient who does not know what happened to him and so throws the defendant-surgeon into the lion's den of lay jury speculation, under the guise of *res ipsa loquitur*. We sympathize with the unconscious patient too. We agree that he is entitled to a full disclosure of the facts—of every detail of what went on while he was unconscious. But what he is not entitled to is *res ipsa loquitur*. One has to but look at the requirements of *res ipsa loquitur* to see that it cannot apply. First, the accident must be of a kind that ordinarily does not occur in the absence of someone's negligence. While such complications do not occur frequently in operations, they can and do occur for no known reason and without negligence on anyone's part. It has always been a fundamental axiom of the law that the mere happening of an accident, no matter how disastrous the consequences, is no evidence that there has been negligence. . . .
>
> Furthermore, even the meager requirement of the rule of sympathy—that the evidence is more accessible to the defendant-doctor than to the plaintiff-patient—has not been met! The patient, no matter how unconscious during the operation, has no trouble obtaining all of the facts if he hires a competent attorney. Today all jurisdictions have broad rules of discovery, which compel production of all testimony in advance of trial so that every fact is known.

At the conclusion of his article and as a comment on the California cases in this field, Mr. Morris states:

> Thus the fallacy inherent in the rule of sympathy is that whenever a bad result follows an operation (where of course normally no such bad result occurs) it is presumed by the courts that the reason for the bad result must be some negligence on the part of the operating surgeon and therefore a lay jury is entitled to weigh the defendant-doctor's explanation of his conduct against such presumption without proof by expert testimony from another doctor of just what the defendant-doctor did wrong. In this situation the

V 16
1957

lay jury is forced to speculate between the defendant-doctor's explanation and the natural sympathy for the injured patient—with disastrous results to the defendant-doctor.

Thus it is apparent that there are numerous vices inherent in a distortion of the doctrine. It is unfair to the jury in professional liability cases in that the members are not permitted the medical education and assistance they need and are in fact entitled to in order to form a judgment fairly. It is also grossly unfair to the doctor in that it subjects him to a rule of sympathy and jury speculation, frequently with disastrous consequences. Through its distortion inroads are being made upon the sound legal principles which afford proper protection to the medical profession.

Physicians are continually urged to familiarize themselves with their legal responsibilities and what constitutes malpractice in the eyes of the law. This would seem to be an equally good recommendation for attorneys. It is of little value for them to quote proper instructions to a jury and sanctimoniously reassure doctors as to the protection available in professional liability suits, and at the same time encourage spurious suits by disgruntled patients. More regard for the existence or nonexistence of legal liability on the part of the physician and less for tricks and devices for getting a case to the jury would seem to be in order. It would also help to convince doctors that in testifying in a professional liability case or any other suit they were furthering the ends of justice rather than the economic status of a few overactive claim-conscious attorneys and their stimulated clientele.

Textbooks in Lieu of Medical Testimony

Within the last decade two states have adopted laws which would provide for the admissibility in evidence of textbooks in lieu of expert testimony. The Massachusetts law,[7] adopted in 1949, provides as follows:

> A statement of fact or opinion on a subject of science or art contained in a published treatise, periodical, book or pamphlet shall, in the discretion of the court, and if the court finds that it is relevant and that the writer of such statement is recognized in his profession or calling as an expert on the subject, be admissible in actions of contract or tort for malpractice, error or mistake against physicians, surgeons, dentists, optometrists, hospitals and sanitaria, as evidence; provided, however, that the party intending to offer as evidence any such statement shall, not less than three days before the trial of the action, give the adverse party notice of such intention stating the name of the writer of the statement and the title of the treatise, periodical, book or pamphlet in which it is contained.

In March, 1953, the state of Nevada adopted a law[8] which is almost identical to the Massachusetts law. Both of these laws take exception to the general rule that textbooks may not be admitted in evidence to establish the truth of statements found therein because of the fact that the author is not present and subject to cross-examination.

A. M. A. Study of Professional Liability

In response to a number of resolutions presented to the A. M. A. House of Delegates requesting advice and assistance, an exhaustive survey of medical professional liability is now being conducted by the Association's Law Department.

In planning the study, it was decided that the following projects should be undertaken:

1. An analysis of state insurance laws and regulations.

2. A review of state statutes of limitation.

3. An analysis of reported cases. A review has been completed of medical professional liability cases (605) reported from 1935 through 1955. This report shows the areas of medical practice in which professional liability cases occur most frequently, the circumstances usually surrounding such claims and their disposition.

4. An analysis of professional liability claims involving physicians in government service.

5. A survey and analysis of pertinent state legislation.

6. A survey of state medical societies concerning the availability of professional liability insurance, the most prevalent problems in the field, and the status of claims prevention programs.

7. A survey of the professional liability insurance programs of 12 national medical societies.

8. A survey of a random sampling of 5% of the members of the American Medical Association. As a result of the information received, various analyses that have been made showing the status of claimants as to age, sex, and occupation; negligent acts alleged; the relation of the physicians' type of practice to the alleged negligent acts; the places where the incidents occur; and the disposition of all claims and suits.

9. The preparation and publication of special articles dealing with such subjects as The History of Professional Liability Claims in the United States; Medical-Legal Hazards of Anesthesia; Physicians Expressing Opinions as to Former Treatment; The "Res Ipsa Loquitur" Case; the Rule of "Respondeat Superior"; Hazardous Therapy; New Concepts in Professional Liability Suits; Professional Liability Claims Prevention; Professional Liability Insurance Limits; Professional Liability Claims in England; and The Law of Professional Liability.

Every effort has been made to conduct the survey in an objective and judicious manner, and it is hoped that the results will contribute to existing knowledge in the field. The study will indicate the current status of the number and causes of profes-

sional liability claims and suits and the availability and cost of liability insurance. Armed with these facts, we should be in a position to plan a long-range educational program for presentation to both the medical and legal professions.

The Law Department is continuing its study of this subject in other areas. An opinion survey among attorneys and members of the judiciary experienced in the handling of medical professional liability suits will be included. There will also be a study of insurance experience and rates and a survey of comparable fields of negligence actions.

The series of articles and reports that have appeared in THE JOURNAL between Feb. 2 and Oct. 5, 1957, will be published in booklet form and distributed by the American Medical Association.

Medical Expert Testimony

It is wrong in considering the availability of medical testimony to confine one's thinking to professional liability cases alone. This is so because it leaves the false impression that the medical profession has boycotted the courtroom in such actions. The actual facts are that the vast majority of doctors have an aversion to appearing in court and testifying in any kind of lawsuit. Although a few have had unpleasant experiences as witnesses, most have been frightened by the exaggerated reports of their colleagues of "murderous cross-examination" by opposing counsel.

In fairness to the physician, consideration must be given to the basic reasons behind this aversion. First, there is a fundamental difference in the method of approach of law and medicine so far as the discovery of truth is concerned. The lawyer attempts to maintain his position by argument and contention with opposing counsel. His life is one of advocacy of causes; his object is to magnify his own arguments and to belittle those of his opponent. The physician, on the other hand, does not live by contention. His training is in the free and open atmosphere of the laboratory, hospital, sickroom, or private office. He demands full and frank discussion and disclosure of all phases of a case. When all pertinent data are collected, he correlates them and forms a judgment. By training and practice, therefore, the whole tempo and attitude of the day-to-day experience of the physician and lawyer are totally different.

In addition to being unfamiliar with situations which to a lawyer are commonplace, physicians sometimes complain that they are made parties to the case in which they testify. This practice should, of course, be discontinued. Medical witnesses should testify concerning a certain set of facts and should never be made an advocate in the proceedings.

Another reason for the doctor's hesitancy to act as a witness is his failure to understand the concept of examination and cross-examination. It appears to the average medical witness that while one attorney is trying to establish the truth, opposing counsel is trying equally hard to keep the truth from being brought before the jury and court.

The physician also dislikes the time that court cases take from his daily activities—and it is not because he fears he might lose a fee. Physicians today are very busy people, with morning, afternoon, and sometimes all-night hours. The effect of stories about doctors cooling their heels in court for hours on end while lawyers argue seemingly obscure legal technicalities is difficult to overcome.

However, in the interest of the profession and particularly the public this hesitancy on the part of the physicians to testify must be overcome. The need for an all-out effort is obvious from the fact that from 65 to 80% of all cases tried today require medical testimony; that 7 out of 10 personal injury cases are decided on medical rather than legal considerations. During the past decade medicine has been making tremendous strides—amazing progress with surgery and with drugs. Doctors are now able to do new, unusual, and complicated procedures. Consequently when these procedures become germane to a litigated case, an ethical and qualified physician should be available and willing to testify. Juries cannot and should not evaluate these matters without expert medical advice.

Further, the role of the medical expert witness should not be played by a few. It is appalling to note the unprofessional and unethical actions of the few doctors who have become "professional witnesses" for plaintiffs and defense counsel. This new "medical specialty" is an injustice to the medical profession and to the public, and should be eliminated. In this endeavor the active assistance of the legal profession is imperative, for wherever a doctor testifies improperly there is at least one lawyer encouraging and misleading him.

Related Activities of Organized Medicine

The American Medical Association, with a membership of some 160,000 physicians, is concerned with many problems of medicolegal, social, economic, and political nature. Medical expert testimony is such a problem. It is one that has been of interest and concern to the medical profession for many years.

The proceedings of the House of Delegates of the American Medical Association, the policy-making body of the Association, contain many references to the subject. In 1914, a Committee on Expert Testimony reported after a three-year comprehensive survey of the entire field of medical expert testimony. The Committee's recommendations were to distinguish between matters of fact and matters

V 16
1957

of opinion, to place no restrictions on the testimony of fact, and to limit the testimony on opinion to those experts called by the court. The Committee recommended that the compensation of such experts should be fixed by the court and charged as a part of the cost of the case or against the party requesting the testimony. The Association accepted the report with the comment that "the solution to this vexing problem cannot be forced; it must come gradually and with the cooperation of the American Bar Association and the various state bar associations."

In 1929, the House of Delegates again adopted a resolution expressing its interest in the correction of the abuse of medical expert opinion evidence and offering cooperation to the American Bar Association and others in promoting the passage of legislation and in bringing about suitable changes in court procedure with reference to such evidence.

The American Medical Association has done more than just adopt resolutions on this matter. As an example, in October, 1955, the American Medical Association sponsored a series of three Regional Medicolegal Symposiums—in Chicago, Omaha, and New York City.

A part of the program at each meeting was designed to acquaint physicians with their essentiality in litigation and to dispel their fears of testifying in court.

To this end a demonstration of a mock trial was presented to show the wrong way and the right way for a physician to act in his role as a medical witness. The demonstration was repeated before medical and legal groups in 15 cities last year. In addition the members of the staff of the A. M. A. Law Department have presented talks on this subject at numerous medical or medicolegal meetings.

About two years ago, the Wm. S. Merrell Company, drug manufacturers in Cincinnati, and the Dynamic Film Corporation of New York saw the potential in the medical-legal field. They asked the A. M. A. to cooperate in the preparation of a series of six medicolegal films. After consultation with the American Bar Association, it was agreed to begin the project, and our demonstration of the physician as a medical witness was selected as the first topic. The second film, which was presented at the A. M. A. meeting in New York in June, deals with medical professional liability.

Again, in March of this year, the A. M. A. held another series of three regional medicolegal meetings—in Atlanta, Denver, and Philadelphia. Over 1,000 attorneys and physicians attended these meetings to hear and participate in a day-and-a-half discussion of three subjects: The Use of Chemical Tests for Intoxication in Court, Trauma and Cancer, and Medical Expert Testimony.

Committees for the Review of Medicolegal Testimony

Since its creation in August, 1954, the Law Department of the American Medical Association has received many inquiries from state and county medical societies desiring to initiate committees for the review of medicolegal testimony. Accordingly, each state society has recently been asked for information concerning the activity and experience that it or any of its county societies has had in organizing and maintaining such committees or in working on any other joint activities with the Bar Association.

The so-called Minnesota Plan was initiated in 1940 when a committee was appointed by the president of the Minnesota State Medical Association, with the approval of its council, to review those court cases in which medical testimony appeared to the court, to the attorneys, or to physicians to have been so contradictory as to indicate that one or more of the medical witnesses had consciously deviated from the truth.

Thereafter, the Illinois State Medical Society, the Kansas Medical Society, the Chicago Medical Society, and the Harris County Medical Society (Texas) established committees patterned after the Medical Testimony Committee in Minnesota. In addition to the above, the Louisiana, Indiana, and the Wisconsin Medical Societies have worked with their state bar associations in connection with the review of medicolegal testimony. The Medical Disciplinary Board Act of Washington provides for the review of medical testimony by the disciplinary board.

In some states and cities, committees or panels have been created for the purpose of providing the courts with impartial medical expert witnesses. About 15 years ago, the Los Angeles County Medical Association and the Los Angeles Bar Association jointly established a panel of physicians and surgeons to assist the courts in obtaining impartial medical testimony. Today, there are at least two physicians on the panel for selected specialties, or between 20 and 24 members. The panel physicians are selected by the joint committee of physicians and attorneys after each has indicated his willingness to examine the patient and testify. The court makes all the arrangements, including the establishment of time and place of examination and the compensation the physician is to receive. This cost is generally borne by the party who requests the appointment of the independent examiner. An impartial medical witness program is now in operation in New York County. A similar plan has been initiated by the Baltimore City Bar Association, the Maryland State Bar Association, and the Medical and Chirurgical Faculty of the State of Maryland.

In addition to the work of the medical societies, the American Bar Association, the state bar associations, the National Conference of Commissioners

on Uniform State Laws, and many individuals within the legal profession have devoted their talents liberally in an effort to eliminate some of the problems associated with the use of expert witnesses. And, as I understand it, the consensus is that impartiality can best be achieved by somehow making the expert a neutral witness, not obligated in any way to either party. Two means for accomplishing this have been suggested: one by legislation, and the other by voluntary agreement.

The report and recommendations of the National Conference of Commissioners on Uniform State Laws, in 1936 and 1937, adequately describe both legislative and voluntary efforts to that date. The recent report [9] of the Special Committee of the Association of the Bar of the City of New York on its Medical Expert Testimony Project includes a review of voluntary programs and objectively and adequately describes the very excellent medical testimony project of the New York Bar.

Both reports bespeak the efforts of the bar to improve the quality of medical expert testimony. Yet, despite the continued and conscientious efforts of both professions it cannot be said that a solution has been discovered. None of the suggestions yet offered has had wholehearted acceptance by the judiciary, the bar, or the public.

Although the basic reluctance of physicians to testify in litigation generally is undoubtedly greater in medical professional liability cases, the reasons should not be hard to understand. Further, to assume that the medical profession is unique among professional groups in this regard is false. In a District of Columbia case, the judge stated: "Physicians, like lawyers, are loathe to testify that a fellow craftsman has been negligent, especially when he is highly reputable in professional character." [10]

The professions of law and medicine are both far from exact sciences. There is fortunately room for, and in practice there exist, in both professions, many different, equally valid opinions on a given set of facts. Both groups deal with complicated problems, the solutions to which can vary, in an individual case, on the basis of the most minute difference in circumstances.

In an address [11] presented in Dallas in August, 1956, Dr. Dwight H. Murray, who was then President of the American Medical Association, said in this regard:

> In medicine there has been, and I hope always will be, room for disagreement. Many procedures have their own adherents and when suggested therapy differs there will always be strong supporters for each approach. As an example, some doctors in setting a fracture prefer a slight offset of the bones on the theory that a stronger callus is formed. Others demand positive and complete alignment. Either can point out examples of his theory . . . walking, riding, swimming or golfing. Either honestly could express disagreement in private or on the witness stand, with the treatment given by the other.

These factors, when combined with the natural friendship and pride existing between members of the same profession, are bound to result in a reluctance on the part of a physician or an attorney to condemn publicly a fellow practitioner. If the opposite were true, the resulting professional climate would most certainly stifle legal and medical progress and establish a relationship between members of the professions and between the professional man and his patient or client which would seriously impede the administration of justice and impair the public health.

In areas where it is obvious that physicians or attorneys are neglectful of their obligations or are dishonest, then the two professions should work together to disfranchise those who make a mockery of justice. Licensure should be withdrawn by the state from the physician who sells his testimony to the highest bidder or shades it to the extent that he is paid. And by the same token, it follows that lawyers who engage in and encourage such physicians should likewise be denied the right to practice their profession.

Interprofessional Cooperation

Although members of both professions and medical and legal associations at the national, state, and local levels have had these matters of interprofessional concern under consideration for some time, it is only comparatively recently that concrete steps have been taken to solve them. Since 1954, the American Medical Association has greatly accelerated its efforts in the field of medicolegal relations to meet what it considers to be a growing desire on the part of the legal and medical professions to join in a sincere cooperative effort.

Medicolegal Conferences

As indicated earlier, the Association through its Committee on Medicolegal Problems and its Law Department has planned, encouraged, and participated in medicolegal conferences at the regional, state, and county levels. In developing the theme of these conferences, it was recognized that lawsuits are adversary proceedings and that conflict is a major element in the medicolegal field. Discussions and papers presented from the viewpoint of each profession proved that doctors and lawyers are both attempting to obtain the best results from individual and professional efforts. In presenting the view of medicine or law, every effort was made to clarify misunderstandings, not for the sake of understanding alone, but as a means to an end—the welfare of the individuals served, whether identified as patients, clients, or the public. At the regional meetings sponsored by the American Medical Association in 1955 and 1957, three broad areas of medicolegal relations were considered: medicine's contribution to the administration of justice; mu-

V 16
1957

tual medicolegal problems as viewed by each profession; and the role of a medical expert witness under proper and improper courtroom conditions.

In the area of the administration of justice there were provocative discussions on traumatic neurosis, trauma and disease, medical expert testimony, and medical science in the administration of criminal justice. In the area of medicolegal problems there were discussions of the several aspects of professional liability, a consideration of the professional man as a taxpayer, and an exploration of the best methods to insure unbiased medical expert testimony.

Medicolegal Liaison and Interprofessional Codes

The Cincinnati Bar Association and the Cincinnati Academy of Medicine were among the first groups to adopt formally an interprofessional code ("Standards of Practice Governing Lawyers and Doctors in Cincinnati"). This agreement, which contains a preamble and 12 brief paragraphs, covers with clarity and efficiency three of the most important problems affecting the two professions, namely, the obtaining of medical testimony, medical records, and provisions of adequate compensation to the physician for his services in connection with litigation.

Many other cities and states have followed their lead and have either adopted or are actively studying such a document. The codes, in general, contain provisions relating to written reports to be furnished by the doctor; conferences between physician and attorney prior to trial; arrangements made in advance for the physician to testify; the conduct of a physician while on the witness stand; and the compensation a physician should obtain for testifying. It is generally acknowledged that these codes will not, in and of themselves, eliminate interprofessional friction, but a continuing effort must be made if these problems are to be resolved.

In addition to such codes of understanding, the District of Columbia and 25 state medical societies have either established liaison with their bar associations or expect to do so in the near future.

Recently, the American Bar Association and the American Medical Association appointed a national medical-legal liaison committee. This is a step that is long overdue and should provide another effective link between two great professions.

Conclusions

It should be obvious to any conscientious and unbiased observer that an honest effort has been made during the past few years to improve the application of medical science in the administration of justice.

It is nevertheless still true that physicians in the practice of their profession have made and will continue to make their share of human errors, that physicians need to be educated to their responsibility to testify in court in various types of cases, that it is necessary to make a closer review of medical testimony of the type which is, unfortunately, solicited and presented, on occasion, for plaintiffs and defendants, and that a better rapport between the legal and medical professions is an absolute necessity. It is equally obvious that the mere existence of these facts and the need for improvement falls far short of the "medical conspiracy" which has been so glibly and irresponsibly alleged.

Persons who make charges of this type do not want ethical, objective, and impartial medical testimony available in all litigation—they prefer a further distortion of the theory of *res ipsa loquitur*, and an extension of the legally objectionable type of legislation that has been enacted in Massachusetts and Nevada. True, these mechanisms produce "second-rate" medical evidence, but that appears preferable, to some, to the presentation of proper medical facts.

The American Medical Association, the American Bar Association, and many of the state and local medical and legal societies are just now becoming sufficiently acquainted with the mutual problems of medicine and the law to initiate concrete efforts at better understanding. The success of these efforts requires the assistance of all ethical and honest physicians and attorneys in the best interests of the public as well as the professions.

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MEDICAL NEWS

ARIZONA

Center for Heart Studies.—A center for special heart studies has been established at St. Luke's Hospital, Phoenix, through the cooperation of the hospital board of directors and the Greater Arizona Heart Association. The center will enlarge facilities that have been available at the hospital for two years. The facilities and service function around cardiac catheterization and angiocardiography. Because of limitations in personnel and funds, the center is not intended as a general consultation service in heart disease; however, funds have been used to establish an adequate armamentarium for cardiac surgery.

CALIFORNIA

Society News.—The Radiological Society of Southern California has elected the following officers for the coming year: chairman, Dr. Donald Laing, Pasadena; vice-chairman, Dr. George Jacobson, Los Angeles; secretary-treasurer, Dr. Harold P. Tompkins, 658 S. Westlake, Los Angeles 57.

Personal.—Dr. Francis R. Schwartz has been appointed regional medical director for United Air Lines at San Francisco, replacing Dr. Arthur C. Ladd, who has taken an extended leave of absence for postgraduate studies at Harvard University, Boston.

CONNECTICUT

University News.—The Yale University School of Medicine Arthritis Study Unit will present Dr. Alexander B. Gutman, speaking on "Pathogenesis and Management of Primary and Secondary Gout" at the Fitkin Amphitheater, New Haven, at 3:30 p.m. Oct. 17. All physicians are invited.

FLORIDA

University News.—The Miami Chapter of the Phi Delta Epsilon Fraternity will present a lecture at the University of Miami Medical School Oct. 17. Dr. William C. Stadie of Philadelphia will be the guest lecturer and will discuss "Metabolic Abnormalities in the Diabetic State."

ILLINOIS

General Practice Meeting in Springfield.—The 10th annual scientific assembly of the Illinois Academy of General Practice will be held Oct. 22-25 at the Illinois State Armory, Springfield. Dr. Orvan A. Phipps is president of the academy. The following panel discussions are scheduled: immunology, therapy in cardiovascular disease, and pediatrics—emergencies, accidents, and behavior. The program includes the following topics by out-of-state speakers:

Pain Patterns in the Diagnosis of Certain Upper Abdominal Diseases, Dr. Lucian A. Smith, Rochester, Minn.

Management of Cardiac Decompensation, Dr. Milton W. Anderson, Rochester, Minn.

The Allergic Patient—His Problems, Office Diagnosis and Treatment (Emphasis on Bronchial Asthma), Dr. Nathan Silbert, Lynn, Mass.

The All American Killer or National Hazard, Sgt. E. C. Paul, Indianapolis, Ind.

Cervical Biopsies in Office Practice, Drs. George S. Allen and Malcolm L. Barnes, Louisville, Ky.

Minor and Major Vascular Accidents, Dr. C. R. Hanlon, St. Louis.

Current Concepts in the Control of Urinary Tract Infections, Dr. Ian M. Thompson, Ann Arbor, Mich.

Scientific and technical exhibits are planned. Ten hours of category I credit will be given academy members for attendance. Entertainment includes the annual banquet Oct. 24 at the Hotel Leland. For information write the Illinois Academy of General Practice, 14 E. Jackson Blvd., Chicago 4.

Chicago

Society News.—The Chicago Neurological Society has elected the following officers for 1957-1958: president, Dr. Oscar Sugar; vice-president, Dr. John J. Madden; councilor, Dr. Irving C. Sherman; and secretary, Dr. Meyer Brown.——The Chicago Orthopaedic Society has elected the following officers: president, Dr. Earl S. Leimbacher; vice-president, Dr. Fred L. Stuttle; president-elect, Dr. Carlo S. Scuderi; secretary, Dr. William A. Larmon, 700 N. Michigan Ave., Chicago 11; and treasurer, Dr. Charles V. Heck.

IOWA

Iowa Journal Honors Dr. Bierring.—The August issue of the *Journal of the Iowa State Medical Society* was dedicated to the life and achievements of Dr. Walter L. Bierring, who served as president of the American Medical Association in 1934. Dr. Bierring, who also received the A. M. A. distinguished service award in 1956, has had a career which Dr. Joseph B. Priestley, of Des Moines, said parallels in many ways the life of Sir William Osler, whom Dr. Bierring knew well. Besides Dr. Priestley, authors of articles about Dr. Bierring were Drs. Daniel J. Glomset, now of Santa Barbara, Calif.;

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education, and public health. Programs should be received at least three weeks before the date of meeting.

V 16
1957

Fred Sternagel, West Des Moines; and Lieut. Col. Philip G. Keil, now of San Antonio, Texas. Dr. Priestley said, "A great teacher and scientist, Dr. Bierring [who is 89 years of age] has a never-aging mind and an alert vision for everything that is best in medicine. His name is a symbol of medical progress not only for us but for medical men throughout the United States and even in foreign countries."

KENTUCKY

College of Physicians Meeting in Lexington.—The Kentucky regional meeting of the American College of Physicians will be held at the Central Baptist Hospital, Lexington, Dec. 7. Dr. Dwight L. Wilbur, president-elect of the college, will present "The Third Person in Medicine" at the dinner meeting. Insurance will be discussed by Mr. Ralph O. Claypoole Sr., Philadelphia. The program includes the following papers:

Pulmonary Abscess—A Review of 70 Cases, Drs. Daniel N. Picker and William Ruoff, Louisville.
Migration of Potassium in Periodic Paralysis, Dr. Matthew C. Darnell, Lexington.
Multiple Myeloma in Siblings, Drs. Wallace E. Harrell and J. Douglas Ruff, Lexington.
Disability Evaluation in Chronic Pulmonary Disease, Drs. William H. Anderson, Harlan, and William F. Schmidt, Norton, Va.
Oral Hypoglycemic Agents: Current Status, Dr. Franklin B. Moosnick, Lexington.

For information write the American College of Physicians, 4200 Pine St., Philadelphia 4.

MASSACHUSETTS

Research Grants.—Boston University School of Medicine has recently received a total of $275,045 in grants for specialized research projects. Of this total, $150,099 represents a series of renewal grants from the National Institutes of Health for projects currently being carried on in the school's departments of dermatology, surgery, physiology, anatomy, biochemistry, and medicine. In addition, the school has received seven new awards totaling $124,946 from the National Institutes of Health and the United Cerebral Palsy Association for special studies in pediatrics, pharmacology, and physiology. Largest of the new research grants was an award of $38,880 by the National Institutes of Health for a study of potential cancer chemotherapeutic agents. Another new award will be used to carry on a study of the development of cerebral paralysis in infants and children under the direction of the department of pediatrics.

MINNESOTA

Society News.—At a recent meeting of the Minnesota Radiological Society, the following officers were elected for the coming year: Dr. David G. Pugh, president; Dr. Leo A. Nash, vice-president; Dr. Osmond J. Baggenstoss, 1953 Medical Arts Building, Minneapolis 2, secretary-treasurer.

Dr. Slater Honored.—Dr. Sidney A. Slater, a member of the board of the National Tuberculosis Association and superintendent of the Southwestern Tuberculosis Sanatorium in Minnesota, recently received two honors. The University of Richmond awarded him a Golden Legion Certificate of Merit "in recognition of 50 years of service to the university since his graduation in 1907," and the Minnesota Medical Association presented him with a citation of appreciation for "pioneer service in tuberculosis control."

MISSOURI

Personal.—Dr. John Earl Smith, commissioner, Division of Health, St. Louis Department, has received the 1957 W. Scott Johnson Award of the Missouri Public Health Association for "distinguished service in public health" in the state.—— The following are members of the new State Mental Health Commission: Dr. Edmond F. Sassin, St. Louis; and Dr. Emerson D. Chaisson, Columbia. ——Dr. Armand E. Brodeur has been named assistant dean of the St. Louis University School of Medicine. His duties will be in the area of student admissions and curriculum scheduling. Dr. Brodeur received a master's degree in radiology from the university in 1952.

General Practice Meeting.—The ninth annual scientific assembly of the Missouri Academy of General Practice will be held Oct. 30-31 at the Governor Hotel, Jefferson City. Symposiums on endocrinology, gastroenterology, and chest diseases are planned. Topics by out-of-state speakers include the following:

Newer Concepts of Achalasia (Cardiospasm) of the Esophagus, Dr. Nicholas Hightower, Temple, Texas.
Diagnosis and Treatment Relative to Carcinoma of the Esophagus, Dr. H. M. Pollard, Ann Arbor, Mich.
Hemoptysis in Older Men, Dr. Katharine Boucot, Philadelphia.
Bronchoscopy in Diagnosis of Diseases of the Chest, Dr. Herman J. Moersch, Rochester, Minn.
Present Place of Surgery in Heart Disease, Dr. Charles P. Bailey, Philadelphia.
Treatment of the Arrythmias, Dr. William A. Sodeman, Philadelphia.

Panel discussions will follow the formal presentations. Ten hours of category I postgraduate credit will be given academy members for attendance.

NEW YORK

Society News.—Officers of the Northeastern New York Radiological Society for the 1957-1958 year are as follows: president, Dr. Richard Batt, Glens Falls; vice-president, Dr. Kencil Mitton, Schenectady; secretary-treasurer, Dr. Irving Van Woert Jr., Albany.

Personal.—Dr. Sarah H. Hardwicke, former assistant director of Strong Memorial Hospital, Rochester, has been appointed by the United Mine Workers of

America to be associate clinical director for 10 memorial hospitals in Kentucky, West Virginia, and Virginia. She will take office Nov. 1 in Washington. Dr. Hardwicke also has been an instructor and assistant attending pediatrician at the University of Rochester, Strong Memorial Hospital, Cornell University, and New York Hospital.

Name President of Medical Center.—Appointment of Dr. Carlyle Jacobsen as president of the State University of New York Upstate Medical Center, Syracuse, has been announced. The title of president at the center is a new one, and both medical centers of the state university will have presidents whose duties will be commensurate with the established titles. Since 1950 Dr. Jacobsen has been executive dean for medical education at the university offices in Albany. Formerly he was on the faculty of the Washington University School of Medicine, St. Louis, and later was appointed dean of the Graduate College at the State University of Iowa. He is chairman of the Committee on Disaster Studies of the National Research Council, and also serves on the Committee on Educational Research and Services of the Association of American Medical Colleges.

Appoint Preventive Medicine Department Chairman.—The appointment of Dr. Harry A. Feldman as chairman, department of preventive medicine of New York State University College of Medicine, Syracuse, has been announced. A member of the College of Medicine faculty since 1949, Dr. Feldman has been professor of preventive medicine since 1956. Under his direction, the department has undertaken studies on the control of streptococcal infections in persons who have had rheumatic fever. Dr. Feldman also initiated a research program on the epidemiology of toxoplasmosis. He is a member of the board of directors of the Syracuse Rheumatic Fever Foundation, and Onondaga Health Association, a diplomate of the American Board of Internal Medicine and an associate member of the Commission on Respiratory Diseases of the Armed Forces Epidemiological Board.

New York City

University News.—The Gamma Chapter of the Phi Delta Epsilon Fraternity at The Columbia University College of Physicians and Surgeons will present the annual Clay Rae Murray Memorial Lecture Oct. 14, 8 p. m., at Bard Hall. Dr. George Crile Jr., of Cleveland, Ohio will discuss "Some Problems in the Treatment of Cancer."

PENNSYLVANIA

Personal.—Dr. Leo H. Criep, conducted a course on clinical allergy at the Hospital dos Servidores do Estado in Rio de Janeiro Aug. 19-23 as the invited guest of the Brazilian Government. This was in celebration of the 10th anniversary of the opening of this federally controlled hospital. He addressed the Brazilian Allergy Society and the Argentinian Allergy Society.

Philadelphia

Discussion of Asian Influenza.—A panel discussion, "The Asian Influenza of 1957," the first of a series on "Current Problems in Preventive Medicine," will be held at the Hall of the College of Physicians of Philadelphia at 4:30 p.m. Oct. 15. Participants include Dr. John J. Hanlon, chairman, department of preventive medicine and public health, Temple University School of Medicine, and Dr. Tom F. Whayne, professor of preventive medicine and public health, University of Pennsylvania School of Medicine.

Cancer Research at Woman's College.—Cancer of the cervix will be the subject of a new $300,000 research study at The Woman's Medical College of Pennsylvania. The study, conducted by the college in cooperation with the National Cancer Institute of the U. S. Public Health Service, will involve the examinations of some 50,000 women employed in industry each year over a three-year period. A modification of the Papanicolaou technique will be used. Approved by the Philadelphia County Medical Society, the Uterine Cancer Cytology Research project, as it is officially titled, will serve for case identification and research study only. A report on each examination will be forwarded to the woman's private physician, and any further diagnosis or treatment will be carried out by him.

V 16
1957

WISCONSIN

Grant for Leukemia Research.—An initial $32,987 grant from the National Institutes of Health to support the first year of a five-year research program on leukemia by Prof. Harry A. Waisman of the University of Wisconsin Medical School, Madison, has been anounced. The grant is the first of five totaling $165,000 to be expended in the program. Dr. Waisman will study the changes in body chemistry which occur in human beings and animals when they develop leukemia, and will conduct research on the use of existing anti-leukemic drugs and new drugs as they become available.

GENERAL

Rhinologic Society Meeting.—The third annual meeting of the American Rhinologic Society will be held Oct. 18-19 at the Palmer House, Chicago, to be followed by a three-day clinical session in the Illinois Masonic Hospital, Chicago. A total of 14 papers are scheduled and will be followed by panel and open discussions. Papers will be presented by two guests of honor: Dr. Francis L. Lederer, head, department of otolaryngology, University of Illinois College of Medicine, who will speak on "Otolaryn-

gological Heritage," and Dr. John E. Bordley, head, department of otolaryngology, Johns Hopkins Medical School, Baltimore, who will speak on "Respiratory Mucous Membrane." The annual dinner will be held Oct. 19 at which Dr. Walter E. Loch, president of the society, will be toastmaster. There is no registration fee. Members of the profession are welcome. For information write Mrs. Mabel Campbell, 830 Wellington Ave., Chicago 14.

Gastroenterology Meeting in Boston.—The 22d annual convention of the American College of Gastroenterology will be held Oct. 21-23 at The Somerset, Boston. Drs. Carlos J. Sanz and Lino Boudet, Havana, Cuba, will present "Incidence of Esophageal Varices in Cirrhosis" the evening of Oct. 23. The program includes the following panel discussions and moderators:

Ulcerative Colitis, Dr. Everett D. Kiefer, Boston.
Diseases of the Esophagus, Dr. Franz J. Ingelfinger, Boston.
Peptic Ulcer, Dr. Seymour J. Gray, Boston.
Management of Massive Gastrointestinal Hemorrhage in Patients with Liver Disease, Dr. Norman Zamcheck, Boston.

A motion picture program and scientific and technical exhibits are planned. Entertainment includes the 25th annual banquet Oct. 22. A ladies' program has been arranged. For information write Mr. Daniel Weiss, executive director, American College of Gastroenterology, 33 W. 60th St., New York City.

Dietetic Association Meeting in Miami.—The American Dietetic Association will hold its 40th annual meeting in Miami, Fla., Oct. 22-25. Daytime sessions will take place at the Dinner Key Auditorium, where the exhibits of food and equipment companies will be on display. Speakers include Dr. Robert E. Shank, St. Louis; Dr. Rachmiel Levine, Chicago; Dr. Robert E. Olson, Pittsburgh; Dr. Walter M. Hamburger, New York City; Dr. Theodore B. Van Itallie, Boston; Miss Jane C. Ebbs, Washington, D. C.; Mr. Keith A. Fitch, Atlanta, Ga.; Walter O. Walker, Ph.D., Coral Gables, Fla.; J. P. Lesperance, Ph.D., Coral Gables; Warren Guthrie, Ph.D., Cleveland; and James M. Godard, Ph.D., Miami. Major topics to be discussed include dietary allowances, treatment of diabetes, obesity, current research, food administration, refrigeration, communications and human relations, community nutrition, and education. For information write the American Dietetic Association, 620 N. Michigan Ave., Chicago 11.

Safety Congress in Chicago.—The 45th national safety congress, sponsored by the National Safety Council, will be held Oct. 21-25 at the Conrad Hilton, Sheraton-Blackstone, Congress, Hamilton, La Salle, and Morrison hotels, Chicago. Major General B. K. Young, director-general, of The Royal Society for the Prevention of Accidents, London, England, will present an address Oct. 21. A panel discussion to be held Oct. 23 will include the following subjects: engineering and statistical consultation, National Safety Council awards, supervisor development, programming of employee materials, and section activities. Safety films awards will be presented Oct. 22. The 12th annual federal safety conference, sponsored by the Federal Safety Council, will be held Oct. 21-22, as part of the national congress. Entertainment includes a banquet Oct. 23. Registration fee is $5. For information write the National Safety Council, 425 N. Michigan Ave., Chicago 11.

Angiology Meeting in Atlantic City.—The third international congress of the International Society of Angiology will be held at the Ambassador Hotel, Atlantic City, N. J., Oct. 18-21. Dr. Leroy Burney, surgeon general, U. S. Public Health Service, will present an address on Oct. 19. The presidential address will be Oct. 20 by Dr. A. Mario Dogliotti, Turin, Italy. The program includes the following symposiums: management of coronary artery disease, management of aneurysms of the aorta and major arteries of the extremities, management of arteriosclerotic occlusions of the aorta and major arteries of the extremities, and arterial replacements. Speakers from Belgium, France, Canada, Rumania, England, Germany, Brazil, Italy, Cuba, Uruguay, Poland, Sweden, Greece, and the U. S. are scheduled. Simultaneous translations in French, Spanish, and English will be available at all sessions. Motion pictures will be shown each morning and afternoon, running concurrently with the scientific sessions. Scientific and technical exhibits are planned. For information write Dr. Henry Haimovici, Secretary-General, International Society of Angiology, 105 E. 90th St., New York 28, N. Y.

Gulf Coast Clinical Meeting.—The 17th annual meeting of the Gulf Coast Clinical Society will be held Oct. 17-18 at the Buena Vista Hotel, Biloxi, Miss. The program includes the following topics and speakers:

Application of Radioactive Isotopes to Certain Problems of Interest to Practitioners of Medicine, Dr. Arthur L. Kretchmar, research clinician, Oak Ridge, Tenn.
Autonomic Nervous System and Symptomatology, Dr. Eugene Stead, professor of medicine, Duke University, Durham, N. C.
What's New in Obstetrics and Gynecology, Dr. J. P. Greenhill, senior attending obstretician, Cook County Hospital, Chicago.
Common Behavior Problems in Children and What to Do About Them, Dr. Richard E. Wolf, Children's Hospital, Cincinnati, Ohio.
Pathogenesis of the Postgastrectomy Syndrome, Dr. George H. Peddie, clinical instructor in surgery, Baylor University College of Medicine, Houston, Texas.
Early Management of Tendon Injuries of the Extremities, Dr. Robert A. Knight, assistant professor of orthopedic surgery, Campbell's Clinic, Memphis, Tenn.

A clinicopathological conference will be conducted Oct. 18, by Dr. Walter Sheldon, Emory

University, Atlanta, Ga. A banquet will be held Oct. 17. For information write the Gulf Coast Clinical Society, 200 West Jackson St., Biloxi, Miss.

Meeting of Life Insurance Medical Directors.—The 66th annual meeting of the Association of Life Insurance Medical Directors of America will be held Oct. 23-25 at the Hotel Statler, New York City. On Oct. 25 a discussion will be conducted on "Professional and Public Relations" by the following persons: Dr. Albert L. Larson, Travelers Insurance Company; Dr. Frank A. Warner, John Hancock Mutual Life Insurance Company; Dr. William O. Purdy, Equitable Life Insurance Company of Iowa; Dr. Frank J. McGurl, Prudential Insurance Company; and Dr. Charles D. Gossage, Confederation Life Association. The program includes the following topics and speakers:

Status of Radiation Safety in 1957, Dr. Reynold F. Brown, San Francisco.

Hematologic Disorders: Their Disabilities and Prognosis, Dr. Paul Reznikoff, New York City.

Diagnosis, Prognosis, and Treatment of Hypertensive Cardiovascular Disease, Dr. Robert W. Wilkins, Boston.

Hypertension in Substandard Insurance, Dr. Albert A. Pollack, New York City.

Mortality Study in Hypertension, Drs. William Bolt, Jack R. Harnes, and Murray F. Bell, New York City.

Effect of Myocardial Disease and Dysfunction on the Form of the Electrocardiogram, Dr. Charles E. Kossmann, New York City.

Recent Advances in Surgical Correction of Congenital Heart Lesions, Dr. Charles P. Bailey, Philadelphia.

Economics of Health Care, Dr. Howard L. Hauge, Mr. Albert V. Whitehall, and Dr. Percy E. Hopkins.

A reception will be held at 6 p. m., Oct. 23, to which ladies are invited. For information write Dr. Royal S. Schaaf, Secretary, the Association of Life Insurance Medical Directors, P. O. Box 594, Newark 1, N. J.

Fellowship in Dermal Pathology.—The Earl D. Osborne fellowship in dermal pathology, sponsored by the American Academy of Dermatology and Syphilology, provides annually the opportunity for study and training in dermal pathology to a postgraduate student who has completed satisfactorily at least one year or preferably two years of training in dermatology. The stipend is $4,000 a year, divided into four quarterly payments during the year's fellowship. The period of training will be spent at the Armed Forces Institute of Pathology, Washington, D. C., the appointment being subject to approval by the director of the institute. A student must complete one year of graduate training, either before or after completion of the Osborne fellowship, in an institution approved by the board for three years of training. Application blanks may be obtained from Dr. Hamilton Montgomery, Chairman, Committee on Pathology, American Academy of Dermatology and Syphilology, 200 First St. S. W., Rochester, Minn. The next available appointment begins July 1, 1958. Early application is urged and as a rule applications will not be considered after Sept. 1.

Prevalence of Poliomyelitis.—According to the National Office of Vital Statistics, the following number of reported cases of poliomyelitis occurred in the United States, its territories and possessions in the weeks ended as indicated:

Area	Sept. 14, 1957 Paralytic Type	Sept. 14, 1957 Total	Sept. 15, 1956 Total
New England States			
Maine	..	..	1
New Hampshire	..	..	..
Vermont	..	..	..
Massachusetts	2	6	6
Rhode Island	..	..	1
Connecticut	1	2	10
Middle Atlantic States			
New York	8	14	64
New Jersey	1	4	23
Pennsylvania	..	..	10
East North Central States			
Ohio	4	13	55
Indiana	15	26	27
Illinois	5	25	107
Michigan	7	43	71
Wisconsin	1	12	50
West North Central States			
Minnesota	2	2	23
Iowa	4	10	59
Missouri	1	1	54
North Dakota	..	..	..
South Dakota	2	5	3
Nebraska	1	3	11
Kansas	..	2	21
South Atlantic States			
Delaware	..	..	4
Maryland	1	1	1
District of Columbia	5	6	1
Virginia	3	4	17
West Virginia	1	4	8
North Carolina	..	5	27
South Carolina	2	5	6
Georgia	1	2	8
Florida	1	6	17
East South Central States			
Kentucky	..	4	4
Tennessee	1	4	5
Alabama	1	1	3
Mississippi	..	1	18
West South Central States			
Arkansas	1	1	9
Louisiana	2	6	27
Oklahoma	..	2	14
Texas	5	17	42
Mountain States			
Montana	..	..	1
Idaho	..	3	15
Wyoming	..	..	..
Colorado	1	7	12
New Mexico	..	1	7
Arizona	..	..	1
Utah	..	..	9
Nevada	..	..	..
Pacific States			
Washington	..	..	13
Oregon	..	..	10
California	11	34	95
Territories and Possessions			
Alaska	..	..	..
Hawaii	..	..	..
Puerto Rico	..	..	5
Total	90	282	975

V 16
1957

CORRECTIONS

Dr. Rosenblum Goes to North Carolina.—Concerning the news item under this heading in THE JOURNAL Aug. 17, page 1827, Dr. Bernard F. Rosenblum has written that the following part of the item was erroneous: "He will also serve as associate professor of public health administration in the School of Hygiene and Public Health at the University of North Carolina, Chapel Hill, and as associate professor of medicine at Duke University, Durham."

Recurring Infectious Thrombophlebitis.—In the Query and Minor Note "Recurring Infectious Thrombophlebitis," THE JOURNAL, Aug. 17, 1957, page 1857, in the third paragraph, "either Parenzyme or Chymar, 5 Gm. daily for a series of 10 treatments" should have read, "either Parenzyme or Chymar, 5 mg. daily for a series of 10 treatments." This may be given as one dose daily or may be divided into two doses of 2.5 mg. each. In some extreme cases, it may be given in doses of 2.5 mg., four times a day, but, in the average case, 5 mg. daily should be effective.

EXAMINATIONS AND LICENSURE

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination.* Montgomery, June 17-19. Sec., Dr. D. G. Gill, State Office Building, Montgomery 4.

ARIZONA:* *Examination and Reciprocity.* Phoenix, Oct. 16-18. Exec. Sec., Mr. Robert Carpenter, 826 Security Bldg., Phoenix.

ARKANSAS:* *Examination and Reciprocity.* Little Rock, Nov. 7. Sec., Dr. Joe Verser, Harrisburg.

CALIFORNIA: *Written Examination.* Sacramento, Oct. 21-24. *Oral Examination.* San Francisco, Nov. 16. *Oral and Clinical for Foreign Graduates.* San Francisco, Nov. 17. Sec., Dr. Louis E. Jones, 1020 N St., Sacramento 14.

COLORADO:* *Examination.* Denver, Dec. 3-4. Exec. Sec., Mrs. Beulah H. Hudgens, 715 Republic Bldg., Denver 2.

CONNECTICUT:* *Examination.* Hartford, Nov. 12-14. Sec., Dr. Creighton Barker, 160 St. Ronan St., New Haven.

DELAWARE: *Examination.* Dover, Jan. 14-16. *Reciprocity.* Dover, Jan. 23. Dr. Joseph S. McDaniel, Professional Bldg., Dover.

DISTRICT OF COLUMBIA:* *Examination.* Washington, Nov. 12-13. Deputy Director, Mr. Paul Foley, 1740 Massachusetts Ave., N.W., Washington, D. C.

FLORIDA:* *Examination.* Miami, Nov. 24-26. Sec., Dr. Homer L. Pearson, 901 N.W. 17th St., Miami 36.

IDAHO: *Examination and Reciprocity.* Boise, Jan. 13-15. Ex. Sec., Mr. Armand L. Bird, 364 Sonna Bldg., Boise.

IOWA:* *Examination.* Des Moines, Dec. 2-4. Exec. Sec., Mr. Donald V. Saf, State Office Building, Des Moines 19.

KENTUCKY: *Examination.* Louisville, Dec. 9-11. Sec., Dr. Russell E. Teague, 620 South Third St., Louisville 2.

MAINE: *Examination.* Portland, Nov. 12-14. *Reciprocity.* Portland, Nov. 12. Sec., Dr. Adam P. Leighton, 142 High St., Room 514, Portland.

MARYLAND: *Reciprocity.* Baltimore, September. *Examination.* Baltimore, Dec. 10-13. Sec., Dr. Frank K. Morris, 1211 Cathedral St., Baltimore.

MASSACHUSETTS: *Examination.* Boston, Jan. 14-17. Sec., Dr. Robert C. Cochrane, 37 State House, Boston.

MINNESOTA:* *Examination and Reciprocity.* Minneapolis, Oct. 15-17. Sec., Dr. F. H. Magney, 230 Lowry Medical Arts Bldg., St. Paul 2.

MISSISSIPPI: *Reciprocity.* Jackson, December. *Examination.* Jackson, June. Asst. Sec., Dr. R. N. Whitfield, Old Capitol, Jackson 113.

NEBRASKA:* *Examination.* Omaha, June. Sec., Mr. Husted K. Watson, Room 1009, State Capitol Bldg., Lincoln 9.

NEW JERSEY: *Examination.* Trenton, Oct. 15-18. Sec., Dr. Patrick H. Corrigan, 28 W. State St., Trenton.

NEW MEXICO:* *Examination and Reciprocity.* Santa Fe, Nov. 18-19. Sec., Dr. R. C. Derbyshire, 227 East Palace Ave., Santa Fe.

NEW YORK: *Examination.* Albany, Buffalo, New York and Syracuse, Dec. 10-13. Sec., Dr. Stiles D. Ezell, 23 South Pearl St., Albany 7.

NORTH DAKOTA: *Examination.* Grand Forks, Jan. 9-12. *Reciprocity.* Grand Forks, Jan. 12. Sec., Dr. C. J. Glaspel, Grafton.

OHIO: *Examination.* Columbus, Dec. 17-19. Dr. H. M. Platter, 21 W. Broad St., Columbus 5.

OKLAHOMA: *Examination.* Oklahoma City, Dec. 14-15. Sec., Dr. E. L. Lester, 813 Braniff Bldg., Oklahoma City.

OREGON:* *Examination.* Portland, January. Exec. Sec., Mr. Howard I. Bobbitt, 609 Failing Bldg., Portland.

SOUTH CAROLINA: *Examination.* Columbia, Dec. 10. Sec., Dr. H. E. Jarvey, Jr., 1329 Blanding St., Columbia.

SOUTH DAKOTA:* *Examination.* Sioux Falls, Jan. 21-22. Exec. Sec., Mr. John C. Foster, 300 First National Bank Bldg., Sioux Falls.

TEXAS:* *Examination and Reciprocity.* Fort Worth, Dec. 5-7. Sec., Dr. M. H. Crabb, 1714 Medical Arts Bldg., Fort Worth 2.

UTAH: *Examination.* Salt Lake City, July 9-11. Director, Mr. Frank E. Lees, 324 State Capitol Bldg., Salt Lake City 1.

VIRGINIA: *Reciprocity.* Richmond, Dec. 4. *Examination.* Richmond, Dec. 5-7. Address: Office of the Secretary, 631 First St., S.W., Roanoke.

WASHINGTON:* *Examination.* Seattle, Jan. 13-15. Sec., Mr. Thomas A. Carter, Capitol Bldg., Olympia.

WEST VIRGINIA: *Examination.* Charleston, January. Sec., Dr. Newman H. Dyer, State Office Bldg., No. 3, Charleston 5.

WISCONSIN:* *Reciprocity.* Madison, Oct. 18. *Examination.* Madison, January. Sec., Dr. Thomas W. Tormey, Jr., 1140 State Office Bldg., Madison.

ALASKA:* On application in Anchorage and Juneau. Sec., Dr. W. M. Whitehead, 172 South Franklin St., Juneau.

GUAM: *Subject to Call.* Act. Sec., Dr. S. F. Provencher, Agana.

HAWAII: *Examination.* Honolulu, Jan. 13-14. Sec., Dr. I. L. Tilden, 1020 Kapiolani St., Honolulu.

VIRGIN ISLANDS: *Examination.* St. Thomas, Nov. 13. Sec., Dr. Earle M. Rice, Charlotte Amalie, St. Thomas.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

DISTRICT OF COLUMBIA: *Examination.* Washington, Oct. 21-22. Deputy Director, Mr. Paul Foley, 1740 Massachusetts Ave., N. W., Washington, D. C.

FLORIDA: *Examination.* Gainesville, Nov. 9. Sec., Mr. M. W. Emmel, Box 340, University of Florida, Gainesville.

NEW MEXICO: *Examination.* Santa Fe, Oct. 20. Sec., Mrs. Marguerite Cantrell, Box 1522, Santa Fe.

SOUTH DAKOTA: *Examination.* Vermillion, Dec. 6-7. Sec., Dr. Gregg M. Evans, 310 E. 15th St., Yankton.

TEXAS: *Examination.* Austin, Oct. 18-19. Chief Clerk, Miss Pearl A. Barrera, 407 Perry-Brooks Bldg., Austin.

WISCONSIN: *Examination.* Milwaukee, Dec. 7. Sec., Mr. William H. Barber, 621 Ransom St., Ripon.

*Basic Science Certificate required.

GOVERNMENT SERVICES

VETERANS ADMINISTRATION

Increased Compensation for Veterans.—Public Law 85-168 authorizes for more than 2 million disabled veterans higher compensation checks for service-connected disabilities, starting with checks mailed out at the end of October, 1957, the Veterans Administration said on Aug. 27.

Veterans already on the VA's compensation rolls need take no action to get the raise. It will be paid automatically. Also increased will be the special allowances for dependents of paid veterans whose service-connected disabilities are rated at 50% or more. With a few exceptions, the increase will be about 10% across the board, except for totally disabled veterans rated at 100%, whose boost from $181 to $225 per month amounts to 24.3%.

TABLE 1.—*Old and New Wartime Compensation Rates*

Service-connected Disability, %	Wartime Rate* Old, $	New, $
(a) 10	17	19
(b) 20	33	36
(c) 30	50	55
(d) 40	66	73
(e) 50	91	100
(f) 60	109	120
(g) 70	127	140
(h) 80	145	160
(i) 90	163	179
(j) Total disability	181	225
(k) Anatomic loss, or loss of use, of a creative organ, or 1 foot, or 1 hand, or both buttocks, or blindness of 1 eye, having only light perception, rates (a) to (j) increased monthly by	47	47
Anatomic loss, or loss of use, of a creative organ, or 1 foot, or 1 hand, or both buttocks, or blindness of 1 eye, having only light perception, in addition to requirement for any rates in (l) to (n), rate increased monthly for each loss, or loss of use of, by	47†	47‡
(l) Anatomic loss, or loss of use, of both hands, or both feet, or 1 hand and 1 foot, or blind both eyes with 5/200 visual acuity or less, or is permanently bedridden or so helpless as to be in need of regular aid and attendance, monthly compensation	279	309
(m) Anatomic loss, or loss of use, of 2 extremities at a level, or with complications, preventing natural elbow or knee action with prosthesis in place, or suffered blindness in both eyes, rendering him so helpless as to be in need of regular aid and attendance, monthly compensation	329	359
(n) Anatomic loss of 2 extremities so near shoulder or hip as to prevent use of prosthetic appliance, or suffered anatomic loss of both eyes, monthly compensation	371	401
(o) Suffered disability under conditions which would entitle him to 2 or more rates in (l) to (n), no condition being considered twice, or suffered total deafness in combination with total blindness with 5/200 visual acuity or less, monthly compensation	420	450
(p) In event disabled person's service-incurred disabilities exceed requirements for any of rates prescribed, Administrator, in his discretion, may allow next higher rate, or intermediate rate, but in no event in excess of	420	450
(q) Minimum rate for arrested tuberculosis	67	67

* Compensation for disabilities incurred under non-extrahazardous conditions during peacetime are 80% of the wartime rate.

† But in no event to exceed $420 in combination with other applicable ratings.

‡ But in no event to exceed $450 in combination with other applicable ratings.

Unchanged are three statutory rates, two of them at $47 each, involving the anatomic loss, or loss of use, of one part of the body, and the third, at $67 as the minimum rate for arrested tuberculosis. These rates may be payable in addition to the percentage ratings for service-connected disabilities.

Compensation rates payable to veterans whose service-connected disabilities were suffered during peacetime service under non-extrahazardous conditions are 80% of the new wartime rate. Peacetime service disabilities suffered under extrahazardous conditions may be payable at the wartime rates.

Not affected by the increase are the compensation rates paid survivors of veterans whose deaths were service-connected, nor pensions paid wartime veterans or their widows or children for non-service-connected disability or death.

Both old and new wartime rates of compensation paid to veterans for service-connected disabilities are shown in table 1.

Allowances for Dependents.—Veterans whose service-connected disabilities are rated at 50% or more are entitled to additional compensation for dependents.

TABLE 2.—*Additional Disability Compensation for Dependents*

Dependency	Wartime Rate* Old, $	New, $
Wife and		
No children	21	23
1 child	35	39
2 children	45.50	50
3 or more children	56	62
No wife and		
1 child	14	15
2 children	24.50	27
3 or more children	35	39
Dependent parents		
1	17.50	19
2	35	38

* If the disability was incurred under non-extrahazardous conditions during peacetime, additional compensation for dependents is 80% of the wartime rate.

Both the old and new wartime rates are listed in table 2; they are based on 100% disability. The rates for 50% or more are payable at the same ratio that the degree of disability bears to 100%.

Personal.—Dr. Frank J. Schaffer, chief, physical medicine and rehabilitation service, VA Medical Teaching Group Hospital, Memphis, Tenn., has been appointed chief of program development in the same service at Washington, D. C. Dr. Schaffer is certified by the American Board of Physical Medicine and Rehabilitation. He joined the VA in September, 1946, and has served at VA Hospitals in Fort Lyon, Colo., Fort Thomas, Ky., Columbia, S. C., and at the VA regional office in Albuquerque, N. Mex. Among his responsibilities in Washington will be the further development of the career residency program in physical medicine and rehabilitation, which is the second largest career residency program in the VA.

V 16
1957

DEATHS

Hassett, Florence Sullivan ✱ Elmira, N. Y.; born in Elmira, Sept. 28, 1903; University of Rochester School of Medicine and Dentistry, Rochester, N. Y., 1929; certified by the National Board of Medical Examiners; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; past-president of the Chemung County Medical Society; past-president of the medical conference of Rochester Regional Hospitals Council; clinical instructor in medicine at his alma mater; attending physician and physician in charge of electrocardiographic laboratory, Arnot-Ogden Memorial Hospital; consulting physician, past-president of staff, and director of postgraduate education program, St. Joseph's Hospital; consulting physician and member of medical advisory board, Veterans Administration Hospital in Bath; past medical director and president of board of managers, Chemung County Sanatorium; died suddenly, July 6, aged 53, of dissecting aneurysm of the aorta.

Alter, Robert Leonhardt ✱ Toledo, Ohio; born in Toledo March 8, 1913; Duke University School of Medicine, Durham, N. C., 1937; certified by the National Board of Medical Examiners; specialist certified by the American Board of Obstetrics and Gynecology; interned at the Johns Hopkins Hospital in Baltimore, where he served a residency at the Baltimore City Hospital; formerly a resident in obstetrics and gynecology at the Duke Hospital in Durham, N. C., and instructor in obstetrics and gynecology at his alma mater, where he was later assistant professor of obstetrics and gynecology; formerly professor and head of the department of obstetrics and gynecology at the American University of Beirut School of Medicine in Lebanon; fellow of the International College of Surgeons and the American College of Surgeons; died in Modesto, Calif., Aug. 7, aged 44.

Hawley, Sydney James ✱ Seattle; born in Seattle Sept. 28, 1899; University of Pennsylvania School of Medicine, Philadelphia, 1924; formerly clinical assistant professor of Radiology, University of Washington School of Medicine; certified by the National Board of Medical Examiners; specialist certified by the American Board of Radiology; member of the American Roentgen Ray Society, Radiological Society of North America, of which he was president-elect and member of the board of chancellors of the American College of Radiology; past-president of the Pacific Northwest Radiological Society; formerly vice president of the American Registry of X-Ray Technicians; served on the staff of the Geisinger Memorial Hospital in Danville, Pa.; died in the Swedish Hospital July 29, aged 57, of coronary occlusion.

Breitstein, Moses Lewis, Baltimore; born in Richmond, Va., Nov. 18, 1894; Johns Hopkins University School of Medicine, Baltimore, 1919; specialist certified by the American Board of Otolaryngology; an associate member of the American Medical Association; fellow of the American College of Surgeons; an otologist for the city health department; consultant in otology for the Maryland State Department of Education; president of the Baltimore Hearing Society; associated with the Hospital for Women of Maryland, the Baltimore Eye, Ear and Throat Hospital, and the Union Memorial Hospital, where he died July 20, aged 62, of coronary heart disease.

Card, Daniel Parker, Colonel, U. S. Army, retired, Washington, D. C.; born in Smyrna, N. Y., July 29, 1878; University and Bellevue Hospital Medical College, New York City, 1904; fellow of the American College of Surgeons; service member of the American Medical Association; veteran of World War I; entered the medical corps of the U. S. Army in 1909 and retired July 1942; held the Legion of Merit; a Chevalier of the French Legion of Honor; decorated by Poland, Italy, and Serbia; for three years chief physician at Virginia Military Institute, Lexington, Va.; died in the Walter Reed Army Hospital July 24, aged 78, of cancer.

Ryan, Frank Kevan, Plattsburgh, N. Y.; born in Plattsburgh Dec. 12, 1890; George Washington University School of Medicine, Washington, D. C., 1916; member of the Medical Society of the State of New York; fellow of the American College of Surgeons; past president of the Clinton County Medical Society; during World War I a surgeon with the British Expeditionary Forces and later served with the U. S. Army Medical Corps overseas for 16 months; a member of the staff of the Physicians Hospital; served on the staff of the Champlain Valley Hospital, where he died July 18, aged 66.

Garr, Charles Crain, Lexington, Ky.; Hospital College of Medicine, Louisville, 1907; specialist certified by the American Board of Orthopedic Surgery; member of the Clinical Orthopaedic Society and the American Academy of Orthopaedic Surgeons; an associate member of the American Medical Association; fellow of the American Col-

✱ Indicates Member of the American Medical Association.

lege of Surgeons; veteran of World War I; formerly chief surgeon for the Chesapeake and Ohio Railway; on the staff of the Good Samaritan Hospital and St. Joseph Hospital, where he died July 28, aged 72, of acute gangrenous cholecystitis.

Burg, Fred Allan ✱ Sanger, Calif.; University of Oklahoma School of Medicine, Oklahoma City, 1939; served an internship and residency at the General Hospital of Fresno County in Fresno; for three years on the board of governors of the Fresno County Medical Society; formerly member of the city council; served on the staffs of the Fresno Community and Valley Children's hospitals in Fresno and the Sanger Hospital; died Aug. 8, aged 41, of coronary occlusion.

Arndt, Oscar H., Detroit; Detroit College of Medicine, 1906; died July 11, aged 78, of coronary thrombosis and arteriosclerotic heart disease.

Bayliss, George William, Martinsburg, W. Va.; College of Physicians and Surgeons, Boston, 1906; died in the City Hospital May 28, aged 83, of acute coronary disease.

Bentz, George Henry, Saugerties, N. Y.; Columbia University College of Physicians and Surgeons, New York City, 1903; died May 6, aged 75, of carcinoma of the mouth with metastases.

Berg, Albert Page ✱ Philadelphia; Medico-Chirurgical College of Philadelphia, 1901; served in France during World War I; died July 20, aged 78, of abdominal carcinomatosis.

Biggs, Ray Hoyt ✱ Sanatorium, Miss.; Emory University School of Medicine, Atlanta, 1933; member of the American Trudeau Society; at one time health officer of Madison County; formerly assistant superintendent and medical director of the Mississippi State Tuberculosis Sanatorium; died July 12, aged 50, of emphysema and cor pulmonale.

Blackburn, Arthur Dale ✱ Circleville, Ohio; Miami Medical College, Cincinnati, 1902; retired July 1, 1936 as Pickaway County health commissioner; died July 17, aged 77, of acute pulmonary edema.

Blumstein, David Barnett, Miami Beach, Fla.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1904; formerly practiced in New York City; died in the Mount Sinai Hospital July 21, aged 74, of acute myocardial infarction.

Bresky, Hillard, Rego Park, N. Y.; Columbia University College of Physicians and Surgeons, New York City, 1924; member of the Medical Society of the State of New York; died Aug. 2, aged 58, of cancer.

Bussell, Benjamin Randolph ✱ Waycross, Ga.; Atlanta College of Physicians and Surgeons, 1911; past president of the Ware County Medical Society; for many years chief anesthetist at Ware County Hospital; died in the Memorial Hospital July 14, aged 72, of cerebral thrombosis.

Carryer, Carl Haddon ✱ Des Moines, Iowa; Barnes Medical College, St. Louis, 1902; chief of staff, Booth Memorial Hospital; on the staffs of the Iowa Lutheran and Mercy hospitals, and the Iowa Methodist Hospital, where he died July 20, aged 76.

Cohen, David, Louisville, Ky.; Kentucky University Medical Department, Louisville, 1903; an associate member of the American Medical Association, served in France during World War I; on the courtesy staffs of Kentucky Baptist Hospital, St. Joseph Infirmary, Jewish Hospital, and Norton Memorial Infirmary, where he died July 27, aged 74, of hypertensive cardiovascular disease.

Corrington, Dale Donatus, Tallassee, Ala.; Rush Medical College, Chicago, 1924; member of the Medical Association of Alabama; veteran of World War I; on the staff of the Community Hospital in East Tallassee, where he died July 21, aged 59, of chronic nephritis and uremia.

Crispo, Pierre Timothy ✱ Fall River, Mass.; Laval University Faculty of Medicine, Quebec, Quebec, Canada, 1893; formerly school physician; for 12 years served on the board of health, the last six years as chairman; on the staff of St. Anne's Hospital; died in the Truesdale Hospital July 22, aged 85, of cerebral thrombosis.

Delagoa, Arthur Clark, San Antonio, Texas; University of Texas School of Medicine, Galveston, 1932; died July 21, aged 47, of peritonitis and enterocolitis.

Denham, Thomas William, Visalia, Calif.; Kentucky University Medical Department, Louisville, 1905; died in Tulare July 1, aged 74, of myocardial infarction.

Donker, Adrian Edward, Carrington, N. D.; Grand Rapids (Mich.) Medical College, 1907; died in the Carrington Hospital July 29, aged 75, of gastrointestinal hemorrhage.

Emerson, William Joseph ✱ Laredo, Texas; George Washington University School of Medicine, Washington, D. C., 1944; certified by the National Board of Medical Examiners; chief of staff and director of pathology at Mercy Hospital; died July 5, aged 40.

English, Kinsey Ourant ✱ Chicago; Rush Medical College, Chicago, 1930; member of the American Academy of General Practice; veteran of World War I; on the executive medical staff, West Surban Hospital, Oak Park, Ill., where he died Aug. 6, aged 62, of acute coronary disease.

Eveleth, George S., Newport, N. H.; Bellevue Hospital Medical College, New York City, 1888; member of the Medical Society of the State of New

V 16
1957

York; an associate member of the American Medical Association; formerly practiced in Little Falls, N. Y., where he was on the staff of the Little Falls Hospital; died July 22, aged 92.

Fuller, Martin Luther, Abilene, Texas; Baylor University College of Medicine, Dallas, 1908; formerly director of the Laredo-Webb County Health Department; died July 19, aged 79, of cerebral hemorrhage.

Furby, Robert Ludwick, Vancouver, Wash.; University of Illinois College of Medicine, Chicago, 1913; died July 24, aged 72, of coronary occlusion and hypertensive cardiovascular disease.

Fuson, Carl Campbell ✦ Milliken, Colo.; Denver and Gross College of Medicine, 1910; served in France during World War I; on the staff of the Weld County General Hospital, where he died July 16, aged 78.

Galloway, Fletcher Wilson ✦ Florala, Ala.; Memphis (Tenn.) Hospital Medical College, 1903; died July 10, aged 84, of a heart attack.

Gilliland, Alvin Orrin, Cameron, Mo.; Kansas City (Mo.) Medical College, 1903; died July 17, aged 78, of coronary thrombosis.

Gottschalk, Clara Grace ✦ Chicago; University of Illinois College of Medicine, Chicago, 1915; died July 21, aged 74, of acute pulmonary edema and arteriosclerotic heart disease.

Grundset, Ole J. ✦ Montrose, Minn.; College of Medical Evangelists, Loma Linda and Los Angeles, 1927; died June 30, aged 70.

Halbrook, John Franklin, Morrilton, Ark.; Memphis (Tenn.) Hospital Medical College, 1902; past-president of the Conway County Medical Society; veteran of World War I; died in Veterans Administration Hospital, North Little Rock, June 18, aged 83, of cerebral thrombosis and arteriosclerosis.

Hopkins, Richard Thomas ✦ Orofino, Idaho; Cornell University Medical College, New York City, 1909; served on the staff of the Orofino Hospital; died in Portland, Ore., July 29, aged 74, of cancer.

Hopson, George ✦ De Soto, Mo.; University of Tennessee College of Medicine, Memphis, 1931; member of the American Academy of General Practice; formerly associated with the Indian Service; veteran of World War II; died July 4, aged 53.

Infield, Gerald Lee ✦ Northfield, N. J.; Hahnemann Medical College and Hospital, Philadelphia, 1933; health officer; since 1948 mayor; veteran of World War II; medical director of the Atlantic County Hospital for Mental Diseases; died in Atlantic City July 31, aged 51, of congestive heart failure.

Ivanov, Christine Jan, Milwaukee; Marquette University School of Medicine, Milwaukee, 1953; served a residency at the Milwaukee County Hospital for Mental Diseases at Wauwatosa; died July 31, aged 43, of pulmonary embolism following thrombophlebitis of left lower extremity.

Keenan, Maurice Edward, Circle, Mont.; University of Colorado School of Medicine, Denver, 1942; veteran of World War II; died July 16, aged 41, of coronary thrombosis.

Klar, Jacob Joseph ✦ Springfield, Mass.; College of Physicians and Surgeons, Boston, 1935; died in the Wesson Memorial Hospital Aug. 3, aged 55, of coronary thrombosis.

Kroener, William Frederick Sr., Pebble Beach, Calif.; Rush Medical College, Chicago, 1925; certified by the National Board of Medical Examiners; an associate member of the American Medical Association; veteran of World War I; past president of the Whittier Kiwanis Club and the high school board of Whittier; died in the Peninsula Community Hospital, Carmel, July 16, aged 66, of arteriosclerosis.

Lieberman, Louis James ✦ Cleveland; Western Reserve University School of Medicine, Cleveland, 1922; veteran of World War II; associated with Mount Sinai, Polyclinic and Woman's hospitals; died July 26, aged 59, of a heart attack.

Lipkin, Harry ✦ New York City; College of Physicians and Surgeons, Baltimore, 1914; died July 20, aged 66, of carcinoma of the left superior maxillary antrum.

Lurting, Clarence Wilbur ✦ Pittsburgh; College of Physicians and Surgeons, Baltimore, 1903; on the staff of St. John's General Hospital; died in the Allegheny General Hospital July 22, aged 82, of coronary occlusion.

Lynch, Daniel Webster, Miami, Fla.; Northwestern University Medical School, Chicago, 1905; veteran of World War I; died June 6, aged 78, of pulmonary embolism.

McCurdey, Neil Augustus, Norfolk, Va.; University of Virginia Department of Medicine, Charlottesville, 1896; died May 17, aged 85, of acute coronary insufficiency.

McMann, William Henry ✦ Boston; Harvard Medical School, Boston, 1900; died in the Carney Hospital May 21, aged 84, of cerebral hemorrhage.

McNulty, John Benjamin ✦ Memphis, Tenn.; Washington University School of Medicine, St. Louis, 1909; served on the staff of St. Joseph Hospital; died July 18, aged 78.

Mackin, M. Charles ✦ Des Moines, Iowa; Baltimore Medical College, 1891; Chicago Homeopathic Medical College, 1893; served as superintendent of the

Mount Pleasant (Iowa) State Hospital; died in St. Bernard's Hospital, Council Bluff, July 18, aged 91, of cerebral hemorrhage.

Malloy, Henry Darius, Winston-Salem, N. C.; Leonard Medical School, Raleigh, 1910; honorary staff member of Kate Bitting Reynolds Memorial Hospital; died July 28, aged 72.

Marble, Perley Leonidas ✦ Liscomb, Iowa; State University of Iowa College of Homeopathic Medicine, Iowa City, 1899; Hahnemann Medical College and Hospital of Philadelphia, 1906; on the staff of the Evangelical Hospital, Marshalltown, where he died June 19, aged 85, of coronary disease.

Marcus, Samuel Jerome, Pittsburgh; University of Pittsburgh School of Medicine, 1909; an associate member of the American Medical Association; died in the Mercy Hospital July 25, aged 70.

Mayer, Benjamin Harrison ✦ Ellsworth, Kan.; Kansas Medical College, Medical Department of Washburn College, Topeka, 1911; member of the American Society of Anesthesiologists; veteran of World War I; died July 17, aged 69.

Messer, George Frederick, Milwaukee; Kansas City (Mo.) Medical College, 1892; died July 2, aged 86.

Mikesch, William Henry ✦ South Bend, Ind.; St. Louis University School of Medicine, 1913; for six years deputy county coroner; veteran of World War I; died in St. Joseph's Hospital June 25, aged 74, of cerebral vascular thrombosis.

Mitchell, Paul Hayne, Ahoskie, N. C.; University College of Medicine, Richmond, 1907; on the staff of the Ranoke-Chowan Hospital, where he died July 24, aged 71, of cerebral hemorrhage.

Moore, George W. ✦ Bay City, Mich.; Milwaukee Medical College, 1898; past-president of the Bay County Medical Society; for many years health officer of Bay City; on the emeritus staffs, Mercy and General hospitals; died July 15, aged 89, of cerebral thrombosis.

Moore, Jesse McGough, Princeton, Ky.; Hospital College of Medicine, Louisville, 1901; an associate member of the American Medical Association; past-president of the Caldwell County Medical Society; on the staff of the Caldwell County War Memorial Hospital; for many years surgeon for the Illinois Central Railroad; died July 22, aged 81, of chronic myocarditis and arteriosclerosis.

Moore, Joseph Leslie, Brooklyn; University of Pennsylvania Department of Medicine, Philadelphia, 1905; an associate member of the American Medical Association; served on the faculty of the Long Island College of Medicine; veteran of World War I; during World War II a Selective Service examiner; consultant in medicine at the Brooklyn Hospital, where he died July 18, aged 80, of gastric ulcer and peritonitis.

Mueller, Clive Paul, Lieut. Col., U. S. Army, retired, San Antonio, Texas; Northwestern University Medical School, Chicago, 1916; service member of the American Medical Association; veteran of World War I; entered the medical corps of the U. S. Army in 1918 and retired July 1937; died May 30, aged 68, of fracture of the hip and Parkinson's disease.

Myers, Henry F. ✦ Lancaster, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1893; formerly member of the city board of education; for many years on the staff of the Rossmere Sanatorium; died July 20, aged 87, of cerebral arteriosclerosis.

Nark, John Aloysius, Philadelphia; Temple University School of Medicine, Philadelphia, 1927; staff member, St. Mary's Hospital; died July 27, aged 55, of carcinoma of the liver.

Newbury, Nelson Edwards, Atlantic City, N. J.; New York University Medical College, New York City, 1897; died in Atlantic City Hospital July 20, aged 82, of uremia and arteriosclerotic heart disease.

Niederwimer, John Stevens, St. Louis; St. Louis University School of Medicine, 1943; interned at St. Louis County Hospital in Clayton, where he served a residency; served a residency at the Robert Koch Hospital in Koch, Mo.; died July 14, aged 38.

Notkins, Louis Adolph, New Haven, Conn.; Yale University School of Medicine, New Haven, 1903; served on the faculty of his alma mater; veteran of World War I; neurologist consultant for the Veterans Administration; died in the Gaylord Farm, Wallingford, July 21, aged 81.

Nulton, Ida May ✦ Lancaster, Mo.; Keokuk (Iowa) Medical College, 1898; died in St. Joseph's Hospital, Centerville, Iowa, July 13, aged 91, of uremia.

O'Bar, Oliver, Fort Lauderdale, Fla.; Medical Department of Tulane University of Louisiana, New Orleans, 1899; for many years practiced in St. Louis; died July 25, aged 82, of cerebral hemorrhage.

O'Neill, Edward Daniel, Sacramento, Calif.; Louisville (Ky.) and Hospital Medical College, 1908; veteran of World War I; died in the Mercy Hospital July 18, aged 79, of cerebral thrombosis.

Osborn, Alfred Shaffer ✦ McAllen, Texas; University of Texas School of Medicine, Galveston, 1934; past-president and secretary of the Hidalgo–Starr Counties Medical Society; on the staff of the McAllen Municipal Hospital; accidentally electrocuted July 7, aged 45.

V 16
1957

Pennington, Henry Z., Eldorado, Texas (licensed in Texas, under the Act of 1907); died in Memorial Hospital, San Angelo, July 23, aged 90, of carcinoma of the prostate and arteriosclerotic heart disease.

Porterfield, William Lowrie * McClure, Ill.; Rush Medical College, Chicago, 1902; for many years practiced in Chicago, where he was on the faculty of Loyola University School of Medicine and on the staff of St. Bernard Hospital; died in Baltimore July 20, aged 77, of bronchopneumonia and prostatic adenocarcinoma with metastases.

Price, Alfred Stirgus * Des Moines, Iowa; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1904; veteran of the Spanish-American War and World War I; served as chairman of the Polk County Sanitary Commission and county physician; on the staffs of Mercy Hospital and Iowa Methodist Hospital where he died July 18, aged 77.

Price, William Harrison, Shelter Island Heights, N. Y.; Pulte Medical College, Homeopathic, Cincinnati, 1903; for many years practiced in Brooklyn, where he was on the staffs of the Prospect Heights and Peck Memorial hospitals; died July 19, aged 80, of uremia.

Ramage, Chesney Macauley, Fairmont, W. Va.; Johns Hopkins University School of Medicine, Baltimore, 1910; an associate member of the American Medical Association; fellow of the American College of Surgeons; during World War I medical member of the Fairmont draft board; formerly superintendent of the Fairmont Emergency Hospital; on the staff of the Fairmont General Hospital; died July 12, aged 73, of coronary thrombosis.

Rathman, Omer Charles * Billings, Mont.; University of Michigan Medical School, Ann Arbor, 1926; fellow of the American College of Surgeons; veteran of World War II; on the staffs of the Billings Deaconess and St. Vincent's hospitals; died July 12, aged 55, of coronary occlusion.

Raynolds, Elmer L. * Lincoln, Neb.; Eclectic Medical University, Kansas City, Mo., 1901; Kansas City (Mo.) College of Medicine and Surgery, 1916; also a pharmacist, member of the Kansas Medical Society; for many years practiced in Mankato, Kan.; served as health officer of Jewell County, Kan.; died July 28, aged 88, of cerebral hemorrhage.

Rees, Kendall Brooks, Coldwater, Mich.; Detroit College of Medicine, 1912; on the staff of the Coldwater State Home and Training School; died in the Butterworth Hospital, Grand Rapids, June 20, aged 72, of carcinoma.

Remillard, Joseph Laury, Rouses Point, N. Y.; School of Medicine and Surgery of Montreal, Que., Canada, 1897; formerly associated with the U. S. Public Health Service and served as health officer for the village of Rouses Point; died May 22, aged 84, of pneumonia.

Richman, Barash * Chicago; Chicago Medical School, 1930; field health officer for the Chicago Board of Health; served on the Garfield Park Community Hospital; died in South Haven, Mich., Aug. 3, aged 68, of cerebral hemorrhage.

Samuels, John Goodwin * Hickman, Ky.; University of Tennessee College of Medicine, Memphis, 1934; member of the American Academy of General Practice and the Industrial Medical Association; president of the Fulton County Medical Society; vice-president of the medical staff, Obion County General Hospital, Union City, Tenn.; died July 14, aged 47, of coronary thrombosis.

Savedoff, William M. * New York City; Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin, Prussia, Germany, 1914; associated with Morrisania, and Flower and Fifth Avenue hospitals and the Bronx Hospital, where he died July 23, aged 70, of myocarditis.

Schaefer, Otto * Baltimore; University of Maryland School of Medicine, Baltimore, 1894; fellow of the American College of Surgeons; died in Leesburg, Fla., July 1, aged 89, of heart disease.

Scheffer, Carl Julius, West Palm Beach, Fla.; University of Pittsburgh School of Medicine, 1912; died June 14, aged 72, of coronary thrombosis.

Schwab, Frederick, Cedar Rapids, Iowa; Drake University College of Medicine, Des Moines, 1906; died July 7, aged 82, of congestive heart failure.

Sharon, Isaac Paul * Middlebury, Vt.; University of Vermont College of Medicine, Burlington, 1909; on the staff of the Porter Memorial Hospital; died July 17, aged 77, of congestive cardiac failure.

Shaw, Arthur John, Boston; Harvard Medical School, Boston, 1894; served on the staffs of the St. Elizabeth's Hospital, Massachusetts Eye and Ear Infirmary, and the Children's Medical Center; died in Hull, Mass., July 18, aged 85, of cancer.

Shirley, Carl Wilson * Houston, Texas; University of Texas School of Medicine, Galveston, 1925; served on the faculty of the Baylor University College of Medicine; veteran of World War II; on the staffs of the Memorial and Hermann hospitals; died July 25, aged 59, of coronary occlusion.

Sidener, Thomas Taylor * Lima, Ohio; Eclectic Medical Institute, Cincinnati, 1906; died in the Lima Memorial Hospital May 23, aged 90.

Sierakowski, Chester Steven, McKees Rocks, Pa.; University of Pittsburgh School of Medicine, 1910; died in the Presbyterian Hospital, Pittsburgh, June 29, aged 69, of cancer.

Smith, Jesse T., Gamaliel, Ky.; University of Tennessee Medical Department, Nashville, 1895; a member of the county board of health; veteran of World War I; died June 23, aged 90.

Spengler, Frank B., Baldwinsville, N. Y.; Syracuse University College of Medicine, 1906; an associate member of the American Medical Association; served as school physician; died July 16, aged 75, of heart disease.

Sprague, Buell H. * Los Angeles; Sioux City (Iowa) College of Medicine, 1908; member of the American Academy of General Practice; fellow of the American College of Surgeons; in 1918 member of the House of Delegates of the American Medical Association; on the staffs of St. Joseph's Hospital in Burbank, Calif., and the Hollywood Presbyterian Hospital; died July 14, aged 71, of coronary disease.

Steinfuehrer, Gotthold, Chicago; Universität Leipzig Medizinische Fakultät, Saxony, Germany, 1921; died in Vermontville, Mich., June 28, aged 70, of pneumonia and heart disease.

Stone, John Boyd * Churchville, Va.; University of Virginia Department of Medicine, Charlottesville, 1912; died July 20, aged 71, of coronary occlusion.

Swenson, Leonard Carl * Freeport, N. Y.; Vanderbilt University School of Medicine, Nashville, Tenn., 1939; died June 12, aged 42, of pulmonary fibrosis and hypertension secondary to Marie–Strümpell's arthritis.

Thomas, George Elwin * Minneapolis; University of Minnesota College of Medicine and Surgery, Minneapolis, 1904; member of the American Academy of General Practice; died in the Asbury Hospital June 10, aged 80.

Thomas, Merrick Dowdell * Miami, Fla.; Columbia University College of Physicians and Surgeons, New York City, 1904; died in the Doctors Hospital July 9, aged 80, of pneumonia.

Trigg, Franklin Elem * Guthrie, Okla.; College of Physicians and Surgeons, Keokuk, Iowa, 1897; died in the Benedictine Heights Hospital June 15, aged 84, of cirrhosis of the liver.

Turman, George Fugett, Missoula, Mont.; University College of Medicine, Richmond, 1905; an associate member of the American Medical Association; past-president of the Montana Department of Public Health; on the staff of St. Patrick Hospital, where he died July 12, aged 74, of carcinoma of the prostate.

Turner, Clifton Sherwood * Peoria, Ill.; University of Cincinnati College of Medicine, 1920; past-president of the Peoria County Medical Society; member and past-president of the staff, Methodist Hospital; died July 9, aged 62, of arteriosclerotic heart disease.

Turner, Wylie Erasmus Jr. * Piggott, Ark.; University of Tennessee School of Medicine, Memphis, 1939; member of the American Academy of General Practice; served during World War II; a member of the staff of Piggott Hospital; died July 9, aged 43.

Veech, Annie S., Louisville, Ky.; Woman's Medical College of Pennsylvania, Philadelphia, 1909; in June, 1956, received the achievement award of the alumnae association of her alma mater; first director of the Bureau of Maternal and Child Hygiene in Louisville; died in the Pee Wee Valley Hospital July 10, aged 86.

Wasilewski, Joseph Thomas * Coatesville, Pa.; Temple University School of Medicine, Philadelphia, 1928; associated with the Veterans Administration Hospital; died in the Temple University Hospital, Philadelphia, June 27, aged 55.

Webb, Enoch Palmer * Beaver Dam, Wis.; Rush Medical College, Chicago, 1897; died in the Lutheran Hospital June 4, aged 86.

Weber, William Donald * Cleveland; Duke University School of Medicine, Durham, N. C., 1945; certified by the National Board of Medical Examiners; veteran of World War II; member of the American Trudeau Society; resident, University Hospitals; died July 15, aged 37, of acute coronary thrombosis.

Whitaker, William Batchelor, Chicago; Rush Medical College, Chicago, 1897; once on the staff of the Mercy Hospital; veteran of World War I; died in the Veterans Administration Research Hospital July 23, aged 82, of cerebral hemorrhage.

Wilson, William Berry, Colonel, U. S. Army, retired, Redlands, Calif.; St. Louis University School of Medicine, 1926; entered the medical corps of the U. S. Army in 1927; veteran of World Wars I and II; retired April 30, 1946; service member of the American Medical Association; died June 14, aged 59, of coronary thrombosis.

Wohrley, Ivan Charles, Newark, Ohio; Electic Medical College, Cincinnati, 1922; veteran of World War I; served as a medical missionary in West China; died in the University Hospital, Columbus, July 5, aged 62, of coronary infarction.

Worthey, William R. * Call, Texas; Fort Worth School of Medicine, Medical Department of Texas Christian University, 1912; past-president of the Jasper–Newton Counties Medical Society; died July 3, aged 82.

V 16
1957

FOREIGN LETTERS

BRAZIL

Drugs Acting on Sphincter of Oddi.—In the Hospital das Clinicas of the University of São Paulo, Drs. A. Raia and C. Horta investigated the action of the following drugs on the sphincter of Oddi: iodinated contrast mediums used in cholangiography, morphine, diphenylhydantoin sodium, atropine, antihistaminic drugs, thiopental sodium, curare, and amyl nitrite. A contrast medium in the biliary ducts may cause hypertension in the common bile duct. This is not related to the amount of fluid injected. In some subjects, antihistaminic drugs, such as promethazine hydrochloride, may reverse the effect of the contrast medium. Morphine in a dose of 10 mg. and diphenylhydantoin in a dose of 50 mg. caused hypertension in the biliary tree. Atropine and scopolamine hydrobromide given intravenously do not relax the sphincter of Oddi and do not change the pressure in the biliary ducts. Amyl nitrite relaxes the sphincter of Oddi. Its action is quick but transient. Thiopental, curare, and promethazine do not change the pressure within the biliary tree and may be used in patients with pathological conditions of the biliary tree in which we wish to perform manometry and cholangiography.

Megacolon and Megarectum.—At a meeting of the Brazilian College of Surgeons, Dr. Azael Leitzner reported a series of 20 rectosigmoidectomies (6 by the abdominal route and 14 by the abdominoperineal route). None of the patients had had a previous colostomy. In 18 a megasigmoid and in 2 a megarectum was found. The follow-up period ranged from 16 days to five years. Good functional results were obtained in 17 of the patients. A perirectal abscess developed in one patient, and in six partial disruption of the anastomosis occurred. The abscess was treated by a colostomy. Disruption of the anastomosis in one patient lead to suprapubic fistula, in three to vaginal fistulas (one with rectal stenosis), in one to perineal fistula, and in one to perineal and vaginal fistula. Of these seven patients with complications, spontaneous cure occurred in one, one was to have reoperation but died before this could be done, and in five a colostomy was performed. In these five the fistula closed; the colostomy was taken down in two patients, in two a fistula persisted, and one died of acute peritonitis with congestive heart failure. There was a late death (78 days after the operation) which was not related to the operation (suicide by starvation in a mental patient). Dr. Leitzner believes that previous or simultaneous colostomy would have prevented the death caused by acute peritonitis in the patient with heart failure, although a colostomy does not always prevent disruption of sutures. In spite of this, he advises colostomy only when there are serious complications, and he advocates rectosigmoidectomy in the treatment of megasigmoid and megarectum, although the operation is a major one and serious complications may occur.

The items in these letters are contributed by regular correspondents in the various foreign countries.

CANADA

Radioactive Cobalt Therapy.—The June, 1957, issue of the *Journal of the Canadian Association of Radiologists* is chiefly devoted to radioactive cobalt (Co^{60}). It is over five years since Co^{60} beam therapy units were first used in Canada. A preliminary report from Saskatoon summarizes the treatment by Co^{60} of 942 patients with malignant disease in a total series of 3,957 patients treated by various forms of radiation therapy. Predictions made five years ago that the new compact powerful sources of Co^{60} would not only supplant radium beam therapy but also compete with x-ray machines in the 2 and 3 megavolt region have come true and have even been surpassed. Teletherapy units are now available with smaller sources of Co^{60} of the order of 500 to 600 curies for use at shorter treatment distances, generally 50 cm. focus-skin distance. An editorial draws attention to the fact that the main advantage of Co^{60} irradiation used for teletherapy lies in the treatment of deep-seated lesions that could hardly ever be treated adequately with conventional x-ray therapy. It is not due to any special virtue of Co^{60} radiation but is related to the greater penetrating power and the scattering in a forward direction of such radiation. Excessive tissue reactions can thus be avoided. It is difficult to determine whether Co^{60} will improve the results in treatment of neoplastic diseases over those obtained by conventional 0.2 to 0.3 megavolt radiation. It is suggested, however, that doses of Co^{60} radiation 15 to 20% greater than those of supervoltage x-radiation will be required to induce the same biological effects.

Heredity Counseling Service.—The faculty of medicine of the University of Alberta has established a heredity counseling service which will provide consultation to persons referred to it by physicians.

This service has been set up as a committee composed of the heads of five clinical departments (medicine, obstetrics, pediatrics, preventive medicine, and psychiatry) and a consultant in genetics. Personal consultations with patients and their families may be arranged when necessary. The object of the service is to give a clear picture to laymen of the genetic principles involved in any case of hereditary or familial disease. By clarifying the genetic picture, the counselor will assist the patient in putting his total problem into perspective so that he may arrive at his own conclusions. It is no part of the duty of the service to give advice concerning future reproductive behavior, which involves not only biological but also religious, economic, and other factors. In addition to its value to patients and practitioners, the service hopes to accumulate some data which will advance knowledge in human genetics and help with the education of medical students. The 1957 graduating class of the faculty of medicine of the University of Alberta is the first class which has had a systematic course in human genetics covering such topics as the physical basis of heredity, statistical probability, simple single-factor inheritance, blood group genetics, the interaction of heredity and environment, the effects of ionizing radiation, and the applications of genetic knowledge to man.

Immunology and the Canadian Indian.—Although the increase in the Indian population of Canada is proceeding more rapidly than the increase in the non-Indian group, there is still a relatively high death rate, and an appreciable amount of morbidity is still due to communicable diseases. An intensive immunization program has been carried out for several years by the Indian and Northern Health Services of the Department of National Health and Welfare of Canada. Combined diphtheria, pertussis, and tetanus antigen has been supplied to every tribe; BCG vaccination has been encouraged and T. A. B. vaccine has been given when thought necessary. Nevertheless, the general immunological status of the nomadic Indian tribes is unsatisfactory, and federal public health officials have therefore recently carried out a survey of 797 Indians distributed throughout Canada. The results (*Canadian M. A. J.* 77:211 [Aug. 1] 1957) show that general immunity to diphtheria is good, for, of 770 serums titrated, 722 had greater than the Schick immune level of 0.004 unit of antitoxin per milliliter. Though protection against tetanus was not so prevalent, it is expected that with the increased use of tetanus toxoid this situation will improve rapidly. The effectiveness of protection against pertussis was difficult to judge. There was a low incidence of both O and H agglutinins of Salmonella paratyphi A and Salmonella paratyphi C but a high incidence of O and H agglutinins of Salmonella typhi and Salmonella paratyphi B. It would seem, therefore, that typhoid and paratyphoid type B are highly endemic among the groups studied and that vaccination against these should be more widely applied among all Indians. The immunological study suggested that Brucella abortus infection is of relatively minor concern in Indian populations, but tularemia seems to be endemic in certain areas.

Research Prizes.—A new type of charitable foundation for research into rheumatic and heart disease has been set up by a Toronto philanthropist, Mr. James A. Gairdner, who has provided an initial capital of $500,000 to establish the Gairdner Foundation which will provide prizes totaling up to $50,000 a year as rewards to medical men for major research contributions. This is an unusual type of foundation in that it does not aim to give grants to investigators but merely to reward their successes. Investigators will be free to use the award money as they see fit. There will be two types of awards. A class A award of $25,000 is to be given at least once every four years to an investigator whose work is distinguished in the field of connective tissue diseases or heart disease. International awards of three to five annual prizes of not less than $3,000 and not more than $10,000 are to be given for outstanding accomplishments in the same fields. A board of trustees has been created, and the physicians-in-chief of the University of Toronto teaching hospitals will serve as a medical advisory committee. It is possible that the scope of the awards may be expanded later to other fields, particularly to degenerative diseases.

Perphenazine, a New Tranquilizer.—In the *Canadian Psychiatric Association Journal* (2:104, 1957) Cahn and Lehmann report a study of perphenazine (Trilafon), an amino derivative of chlorphenothiazine with ataraxic properties. They used the drug for 84 female patients, 26 of whom were undergoing a severe acute psychiatric disturbance and the remainder being mostly chronic schizophrenics. The drug was given intramuscularly and by mouth, the intramuscular dosage ranging from 15 to 60 mg. a day and the oral dosage from 8 to 192 mg. a day. Excitement, hyperactivity, talkativeness, and insomnia were controlled to much the same extent as with chlorpromazine. The drug was not effective in patients with endogenous depression. Perphenazine also proved a potent therapeutic agent in patients with chronic psychoses. Clinical results similar to those with chlorpromazine were obtained with about one-sixth of the dose of the latter. The principal differences from chlorpromazine were that perphenazine is less painful on intramuscular injection and has fewer autonomic and allergic side-effects but causes extrapyramidal symptoms more frequently and earlier than does chlorpromazine, though these symptoms are well controlled by various drugs given for Parkinsonism. This study sug-

V 16
1957

gested that perphenazine should not be combined with reserpine or given to obese patients. Otherwise it is a useful and safe therapeutic agent in acute and chronic psychiatric disorders.

Chloroquine in Rheumatoid Disease.—The first long-term (four-year) study of continuous daily treatment with chloroquine by mouth for rheumatoid disease was reported by Bagnall (*Canad. M. A. J.* **77**:182 [Aug. 1] 1957). The author is enthusiastic about the results which were studied in 125 private patients, most of whom had classic rheumatoid arthritis although 17 had spondylitis and 10 concomitant psoriasis. There was no difficulty in distinguishing the chloroquine-treated group from the placebo-treated group. In general, the results were considered "good" in 70% of the patients, one-half being in remission. Work performance increased in these patients, the sedimentation rate dropped, and the hemoglobin level rose. Most of these successfully treated patients had received chloroquine therapy for more than two years. All types of rheumatoid disease appeared to respond equally well. Half of the 30% of failures were probably due to toxic reactions that seriously affected the ability to take an adequate dosage. The normal dosage was one 250-mg. tablet of the diphosphate daily at bedtime. Minor toxic effects were common, drug dermatitis being the one most significantly restricting treatment. Hydrochloroquine is under trial as a substitute to try to reduce the incidence of these reactions. There was no agranulocytosis, but leukopenia was noted on six occasions. Chloroquine does not begin to show favorable effects for from 1 to 3 months, and maximum benefit may be delayed 6 to 12 months or even more. The author believes that chloroquine comes closest to the ideal for long-term safe control of rheumatoid disease. The mechanism of action is unknown.

DENMARK

Ultrasonic Treatment.—Dr. Hans Graudal, in *Ugeskrift for Læger* for Aug. 1, noted that, while experimental work has thrown much light on the biological action of ultrasound, clinical tests have failed to show clearly which are the accepted indications for such treatment. This treatment should be based on the fact that ultrasound can produce a deep heating of the tissues with a specific distribution of the rise of temperature. The analgesic effects obtained may also be traced to this. In 43 male and 10 female patients given ultrasonic treatment for hematomas arising in many cases from sport injuries, the size of the hematomas ranged from that of a nut to that of a clenched fist, and in some they were diffuse, extending over the anterior surface of the whole of one thigh. There was no need to extend this treatment beyond a week, and, when the patients were classified according to whether they were treated every day or every other day, the disappearance of the hematomas was found to be about twice as rapid in the former as in the latter group. Undesirable side-effects were not observed.

Hemorrhages from Salicylic Acid.—To investigate the rather vague impression that salicylic acid frequently causes gastrointestinal hemorrhages, Dr. Lis Mellemgaard (*Ugeskrift for læger*, July 18, 1957) reported the findings in a series of 124 patients, excluding those in whom the hemorrhage might have been due to gastric ulcer, cancer, or varicose veins. Of these, 18 had taken large quantities of salicylic acid shortly before admission to the hospital. Attention is drawn to a vicious circle. Taking salicylates leads to mucosal bleeding. The ensuing anemia gives rise to headache which in its turn calls for the taking of more salicylates. Again, the anemia so often associated with chronic diseases of the joints may not always be due to them but may be the outcome of taking salicylates. Because occult gastrointestinal hemorrhages are such a drain on the diagnostic resources of radiologists and others, awareness of the dangers of salicylate medication may often prove helpful.

Driving Licenses for Drug Addicts?—In the period 1949-1955, the health authorities had to deal with 15 cases in which traffic accidents or reckless driving had raised the problem of drug addiction. These were comparatively straightforward cases, in that they were not complicated by the intake of alcohol or by other extraneous circumstances. Drug addiction being so often hushed up, these few cases coming into the open present an incomplete picture of the real dimensions of the problem which is ventilated by Dr. Mogens Nimb in *Ugeskrift for læger* for Aug. 1. The physician countersigning an application for a driving license is not required to ask specifically if the applicant is dependent on drugs other than insulin, but he must certify that the applicant is not suffering from any disease calculated to impair his capacity to drive a car. Most physicians interpret this clause as applicable to drug addiction, but some have ignored this particular risk. In several cases, finding some barbiturate in the blood has determined the issue. When a driver suspected of drug addiction happens to be a physician, the case may be complicated by the possible withdrawal of his right to practice medicine as well as his right to drive a car. In one such case the legal authorities refused to withdraw the doctor's driving license on the plea that as his license to practice medicine had not been withdrawn his right to drive could hardly be challenged —an argument that Nimb refuses to endorse. He foresees that traffic regulations may be invoked to help promote the campaign against drug addiction.

ISRAEL

Viper Venom.—Gitter and co-workers (*Harefua* 52:318, 1957) reported on the isolation of various fractions of the venom of the most important venomous snake in Israel, Vipera xanthina palestinae. The venom, obtained by milking adult specimens, was dried and a physiological saline solution prepared for use in a fractionated paper electrophoretic examination. The toxicity component could be divided in the electrophoretic pattern into six fractions. One moved in the cathodic direction (K_1) and five in the anodic direction (A_1-A_5). Eluates of the fractions A_2 and A_3 caused extensive hemorrhage in mice but no neurotic disturbances. Eluates of the other fractions produced marked neurotoxic effects but no hemorrhage. About 80% of the lethal activity of the whole venom was concentrated in the A_3 fraction which was dominantly hemorrhagic. Combined eluates of fractions K_1 and A_1 and of A_4 and A_5 were exclusively neurotoxic. Hemolytic activity was most pronounced in fractions A_4 and A_5. A coagulation inhibitory effect was found in fractions A_2, A_4, and A_5.

The investigations with a specific antiserum, prepared at the Pasteur Institute, Paris, neutralized only the hemorrhagic action of the whole venom and of fraction A_3. It was, however, without any effect against the neurotoxic components of the venom. Hence, an effort is being made, in cooperation with the Pasteur Institute, to obtain a more potent serum enriched with antibodies and derived separately from the neurotoxic fractions. Preliminary results of laboratory experiments indicated that the concentrated antiserum has a highly protective action in mice. Clinically, these findings are most important. The usual first symptoms after the viper bite are swelling at the site of the bite, local and generalized hemorrhage, hematological changes, and anaphylactoid shock. All these symptoms may be influenced, in analogy to the animal experiments, by the specific antiserum with its antihemorrhagic action. Certain delayed symptoms after the snake bite, such as persistent vasomotor disturbances, restlessness, dysphagia, peripheral neuritis, and urine retention, must be related to the neurotoxic components of the venom (K_1, A_1, A_4, and A_5). These fractions are to blame for the delayed shock and death in human beings after initial improvement and recovery from the hemorrhagic lesions.

Salk Vaccine.—Israel, one of five countries making Salk vaccine, is as yet unable to satisfy the requests of various countries for this product, according to Dr. Nathan Goldbloom, director of the Ministry of Health Epidemiological Laboratory, which produces the vaccine. There is a serious shortage of poliomyelitis vaccine in many parts of the world. Israel produces enough for her own needs but not enough for export. For the first seven months of 1957, only 33 cases of poliomyelitis, with one death, have been reported as compared with 241 cases and 15 deaths in the same period last year. Ten children contracted the disease in July, and one died as compared with 125 cases and five deaths in the same month in 1956. Ministry of Health sources say these figures give increasing evidence of a correlation between the national Salk vaccine campaign conducted at the beginning of this year and the sharply reduced incidence of poliomyelitis. Since the first epidemic in Israel in 1950, there have never been less than 80 cases of this disease in July. Only one of the children who contracted poliomyelitis in July had been inoculated with Salk vaccine.

Subacute Thyroiditis and Mumps Virus.—At the 19th scientific medical meeting of the Israel Medical Association in Jerusalem, Sheba and Eylan reported on a series of 15 patients with subacute thyroiditis. The illness started with a mild pyrexia and pains radiating from the neck to the ears. The pains increased, especially on swallowing. Tenderness of the thyroid gland, unilateral or bilateral, appeared a few days later. This condition was accompanied by sweating, tachycardia, and occasionally by abdominal discomfort. A polymorphonuclear leukocytosis (up to 17,000 per cubic centimeter) was observed in 10 of the patients. In eight patients the serum PBI level was above 8 mcg. per 100 ml. The radioactive iodine uptake was greatly reduced in 12 of the patients. These findings (high PBI and low radioactive iodine uptake) are characteristic of subacute thyroiditis. At the same time, when those cases of subacute thyroiditis appeared, an outbreak of mumps had been flourishing. Examinations of complement-fixation tests against mumps were performed in 11 of the 15 patients with subacute thyroiditis. In 10, a titer of 1:80 or 1:160 was found, which may be considered a positive result. A further proof that the mumps virus was the cause of the thyroiditis was the isolation of the mumps virus from biopsy specimens taken from excised thyroid gland in two patients. Specific inhibition of hemagglutination by convalescent mumps serum established the identity of the virus.

"Regimen Sanitas" Republished.—S. Muntner, physician and translator of Maimonides' medical works, has published in cooperation with the Israel Medical Association a new translation of Maimonides' book "Regimen Sanitas" dealing with the hygiene of the body and the soul. It was originally written in response to a request for medical advice by one of Sultan Saladin's sons, who was a chronic invalid. Maimonides did not refrain from criticizing the overindulgent life of the monarch, destructive to his son's physical and mental health. Although not written for the public, this book became very popu-

V 16
1957

lar. Like all medical works of Maimonides, this book was originally written in Arabic. In 1244, the first Hebrew translation was prepared. In 1477, only a few years after book-printing had started, a Latin edition was published in Florence. It was the first medical book printed there. In his advice for mental hygiene, Maimonides showed a very modern concept: "The need to preserve one's peace of mind in all circumstances. The man's soul is agitated by outer events. Men of weak nerves and small power of resistance are more deeply affected than others and the changes effected in their mental states may exercise an adverse influence on their bodily functions. . . . The decision to do good per se may help to diminish one's grief and sorrow and may even remove them altogether."

JAPAN

Japan Encephalitis.—The Bureau of Health and Welfare has issued a timely warning in respect to Japan encephalitis. Of several infectious diseases ushered in each summer, so-called Japan encephalitis is by far the most dreaded. Each year it strikes 6 persons in 100,000. The death rate is over 35%, and 67% of those who survive are left with dementia or paralysis in the extremities. Although there is no specified therapy, an effective vaccine is available. So far this year, more than 50 cases have been reported. School children and persons over 60 years old seem most susceptible. Since mosquitoes are vectors of the disease, measures for their control are being widely applied, but in a country where rice paddies and other forms of stagnant water are so prevalent, eradication presents enormous practical difficulties.

Cancer.—In 1924 in Japan there were 43,000 deaths from cancer, and cancer was in ninth place as a cause of death. By 1956 there were more than 85,000 deaths from this cause, and it had advanced to second place. More than 50% of the cancers were gastric.

UNITED KINGDOM

Infant Feeding.—Dr. R. M. Dykes, health officer for Luton, near London, reports that there has been a steady fall in breast feeding since 1945. At two to six months, 20 to 25% fewer babies are now breast fed than was the case 11 years ago. For the first six months of life most of the babies in Luton who are bottle fed are given reconstituted dried milk. National dried milk, provided cheaply by the ministry of food, is used far less than proprietary milk powders; 80% of the babies are given the proprietary milk powders, and 20% are given national dried milk. The welfare food scheme provides vitamin supplements in the form of orange juice and fortified cod liver oil, but only 27% of mothers draw their allowance of orange juice and only 17%, the cod liver oil. Vitamin A and D tablets are available to expectant mothers, but only 35% of them draw the free issue.

Comparison of British and French Health Service.—The French are planning to reorganize their health service. Health insurance is compulsory in France, but the methods of reimbursement of medical charges are different from those of Great Britain. The physicians are paid by the patient, who then claims 80% of the fee from the state. The health service is a matter between the patient and the state and does not directly affect the physician. Many physicians are charging more than the ill-defined maximum charges laid down, and the state reimburses according to an arbitrary scale and not according to the fees actually charged—so much so that the patient may get only half of his money back. More than 200 of France's leading physicians earn over 1,000,000 francs (about $2,800) a month. On an average, France's 42,000 physicians have a net annual income of $8,400.

Food Poisoning.—Eating habits in Great Britain have changed. Family meals have, in part, been replaced by mass-produced food eaten in canteens, restaurants, and small eating houses. The increased consumption of ready made foods, such as sausages, meat pies, ice cream, and so-called cream cakes made with synthetic cream, has no doubt contributed to the increase in food poisoning. Milk-borne diseases, which were the bane of the past, are now being replaced by food-borne diseases. The number of cases of food poisoning reported in England and Wales increased from 3,979 in 1950 to 8,961 in 1955. Within the last five years the proportion of such outbreaks in which meat and prepared meat foods were considered responsible was 64 to 69%. Salmonella typhimurium is responsible for 50% of most current food infections. The flesh of slaughtered animals may be infected, but the infection of meat foods usually occurs after slaughtering. Lax methods of cooking and food preparation are usually to blame. This is often the case in outbreaks in which Clostridium welchii is the infective agent. Canteen or restaurant meals are cooked and allowed to cool slowly overnight before being eaten. If meat and meat products were eaten on the day they were cooked, outbreaks of food infection would be reduced.

Vanadium Poisoning in Oil-Fired Boilers.—According to the *Lancet*, several cases of vanadium poisoning in men engaged in cleaning oil-fired boilers have been reported recently. This is becoming of increased importance now that oil-fired boilers are replacing those fired by solid fuel. Oil fuel contains

from 0.01 to 0.03% of vanadium, which accumulates in the soot. Some oils, such as Venezuelan, deposit on burning a soot containing 45% vanadium as pentoxide, while Middle Eastern oils contain only a trace. Workers enter the boilers to remove soot that collects on the heat exchanges and walls. This is removed by scraping, and, during the process, clouds of soot containing vanadium are inhaled. The initial symptoms of vanadium poisoning, which come on within 30 minutes of exposure to the dust, are rhinorrhea, sneezing, watering of the eyes, sore throat, and retrosternal pain. The late symptoms, which occur within 6 to 24 hours, include tightness across the chest, wheezing, dyspnea, epigastric pain, and depression. There is also a dark green discoloration of the tongue. The symptoms last for a few days after exposure. Vanadium can be detected in the urine. Outbreaks occur on oil-burning ships. The workers develop a chronic bronchitis and emphysema. Vanadium poisoning is prevented by wearing dust respirators, using vacuum cleaners for removing as much of the soot as possible, and washing down walls with water sprays.

Scorpion Stings.—In a letter to the *British Medical Journal* of Aug. 10, Dr. M. McA. Holmes of Sokoto, Nigeria, stated that 65 mg. of emetine hydrochloride in 1 ml. of water injected into an area stung by a scorpion gives immediate relief. Sometimes 0.5 ml. or less is sufficient. The author treated over 30 African and European patients by this method. The expression of relief from pain on their faces was obvious and gratifying. Previously, various brands of local analgesics were found to be useless. The writer treated patients who had received a local analgesic and after two or three hours returned with the agonizing pain, which was relieved permanently by emetine. Scorpion venom is a neurotoxin and emetine a protoplasmic poison. The mechanism of the relief is unknown. The writer makes no claim to having discovered this treatment himself.

Inhalation of Grass Spikes.—Inhalation of grass spikes may result in serious consequences if the spike is barbed, as in the case of barley grass, in which the spicules are firm and sharp, are set at an acute angle to a rigid stem, and do not soften on moistening. The arrangement of the spicules in this and some other grasses causes one-way travel with thoracic movement and drives the point onwards. Godfrey (*Lancet* **2**:273, 1957) reports the case of a boy of 9 years who complained of abdominal pain on the right side. Appendicitis was diagnosed and a healthy appendix removed. Shortly afterwards rales were heard on the right side of the chest, and a roentgenogram revealed bronchopneumonia in the base of the right lung, which responded to treatment. Four months later, however, the child was expectorating purulent sputum. After the boy had undergone many admissions to hospital and repeated bronchoscopy and bronchography, lobectomy on the right was done. Section of the excised lung showed a well-preserved inflorescence of barley grass 2 in. long. This had been inhaled two days before the onset of the original abdominal pain. In another case, a girl of 16 months inhaled two grass seeds. Owing to subsequent coughing, retching, and cyanosis, a bronchoscopy was performed and a barbed grass seed removed from the right main bronchus. After two weeks, the radiological signs improved, but 17 days after the original incident the cough recurred, a roentgenogram revealed a slight opacity in the base of the right lung, and the child had a remittant fever. A hot tender fluctuant swelling 2 in. in diameter suddenly appeared to the right of the fourth lumbar vertebra. When incised, it discharged pus containing Escherichia coli for a few weeks. Seven weeks after it had been inhaled, a spike of barley grass more than 2 in. long was removed from the sinus. Removal of the spike produced a fit of coughing, and iodized oil injected into the sinus was traced as far as the diaphragm. The ratchet-like action drove the spike through the lung, diaphragm, and lumbar muscles and out through the skin. It is not known whether permanent lung damage occurred.

Welfare Foods.—A subcommittee under Lord Cohen has made recommendations on the distribution of "welfare foods" (Report of the Joint Subcommittee on Welfare Foods, Her Majesty's Stationery Office, 1957). Orange juice and cod liver oil are free for young children. The subcommittee recommends that the scheme be continued but that orange juice should no longer be given to children over the age of 2 years, because scurvy is almost unknown in older children. Some children have been given enormous doses of vitamin D, e. g., 35,000 I.U. daily, by misguided mothers who give them excessive quantities of cod liver oil as well as foods and proprietary preparations fortified by vitamin D. They thus run a risk of hypercalcemia. As rickets is still seen, the subcommittee considers that cod liver oil supplements should still be issued, but it suggests that the amount of vitamin D be reduced. The new levels for food fortification with vitamin D are: (1) national cod liver oil, average 100 I.U. per Gm. (formerly 200 I.U. minimum); (2) national dried milk, average 90 to 100 I.U. per ounce of powder (formerly 280 I.U. minimum); and (3) infant cereals, average 300 I.U. per ounce of dry cereal (formerly 1,000 I.U. minimum). These levels take into consideration the suggestion of Medical Research Council Conference on Hypercalcemia, which considered a daily intake of 400 I.U. of vitamin D throughout infancy sufficient. The subcommittee hopes that manufacturers of infant foods will cooperate to insure that they do not upset the balance by excessive fortification of these foods with vitamin D.

V 16
1957

CORRESPONDENCE

HEART BLOOD VS. FEMORAL VEIN BLOOD FOR POSTMORTEM ALCOHOL DETERMINATIONS

To the Editor:—In the paper by Turkel and Gifford, "Erroneous Blood Alcohol Findings at Autopsy," which appeared in the July 6, 1957, issue of THE JOURNAL, the authors reported analyses for alcohol conducted on heart blood and femoral vein blood taken from 51 alcoholic cadavers during autopsies performed 3 to 72 hours after death. In 16 of the cases the alcohol level in the femoral blood exceeded the heart level, the ratio being 0.95 to 0.99 in 13, 0.85 in 2, and 0.81 in one. With the remaining 36 bodies, the ratio of heart blood sample to femoral vein blood sample exceeded 1.00 and was above 1.10 in 11 (1.11 to 1.54, average 1.23). Turkel and Gifford ascribe these high ratios to postmortem diffusion of unabsorbed alcohol from the stomach to the region of the heart.

Another factor, apparently overlooked by these authors, may have been the cause of some of the high alcohol ratios. It is the normal lag in the alcohol level of the venous return from a limb during active absorption of orally administered alcohol. This lag was first reported by Haggard and Greenberg in 1934 (*J. Pharmacol. & Exper. Therap.* **52**:150-166 [Oct.] 1934), on the basis of tests with one dog. This phenomenon was subsequently confirmed by us in a large number of dog experiments (Harger, Hulpieu, and Cole: *Fed. Proc.* **4**:123 [March] 1945; Forney, Hulpieu, and Harger: abstracted, *J. Pharmacol. & Exper. Therap.* **98**:8 [Jan.] 1950), although our figures for the magnitude and duration of the lag were lower than those of Haggard and Greenberg. Our dogs received, by stomach tube, 1 to 4 Gm. of alcohol per kilogram in a concentration of 24% by volume. Samples of heart blood and saphenous vein blood were taken simultaneously from the living animals at various time intervals. A summary of our findings is represented in the table.

*Summary of Findings in Samples of Heart and Saphenous Vein Blood**

No. of Animals	Time Interval	Ratio of Heart to Saphenous Blood Alcohol: Range	Ratio of Heart to Saphenous Blood Alcohol: Av.
13	10 min.	(1)0.98; (12)1.22-1.93	(13)1.41
17	15 min.	1.04-1.49	1.20
17	30 min.	0.98-1.27	1.10
17	1 hr.	0.96-1.15	1.01
17	2 hr.	0.91-1.03	0.99
17	3 hr.	0.96-1.13	1.01

* Femoral blood samples taken at 15 and 30 minutes gave results which were almost identical with those from saphenous blood.

More recently Forney, Baker, and I (*Quart. J. Stud. Alcohol* **17**:1-18 [March] 1956) have demonstrated this type of lag in the alcohol level of cubital vein blood of humans, as compared with the level of their fingertip capillary blood. Thirty-four such pairs of blood were taken within 70 minutes after the last drink. The ratios of capillary to venous alcohol of 13 of these ranged from 1.11 to 1.22, with an average of 1.15. The alcohol level of capillary blood is always very close to that of arterial blood (Haggard and Greenberg, *loc. cit.*).

In a previous study by Gifford and Turkel (*J. A. M. A.* **161**:866-868 [June 30] 1956), they introduced 3 to 6 fluid ounces of straight whiskey into the stomachs of 11 nonalcoholic cadavers. After intervals of 10.5 to 24 hours they found alcohol in the heart blood, ranging from less than 0.02% in four cases to 0.106% in one body where death was due to peritonitis. Blood from the femoral vein contained no alcohol, except for a faint trace in one case. These results are in agreement with earlier studies of O. Huber (*Deutsch Ztschr. ges. gerichtl. Med.* **37**:128-135, 1943) and by Bowden and McCallum (*M. J. Australia* **2**:76-81 [July 2] 1949). However, the conditions employed in these three investigations are very drastic, since the concentration of alcohol introduced into the cadaver stomach was much higher than one would usually find in the stomach of a heavy drinker 10 to 15 minutes after his last drink, because the drop in the alcohol level in the living stomach is exceedingly rapid. (On this point see The Pharmacology of Alcohol, by Hulpieu and me in "Alcoholism" [edited by G. N. Thompson, Springfield, Ill., Charles C Thomas, Publisher, 1956, chap. 2, pp. 122-127]).

Since the alcohol level of the brain always parallels that of arterial blood, but not of that return blood from a limb during active absorption (Harger: *J. Forensic Sc.* **1**:27-38 [April] 1956), it may be that the "error" in cadaver blood is in femoral vein blood and not in heart blood. This point can be settled by experiments with animals which are quickly killed after receiving alcohol orally, where samples of femoral vein and heart blood are taken immediately after death and again after the lapse of 12 to 24 hours. The same type of study should also be made in cases of sudden death in humans who have been drinking heavily shortly before death.

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BLOOD ALCOHOL FINDINGS AT AUTOPSY

To the Editor:—The paper "Erroneous Blood Alcohol Findings at Autopsy" by Turkel and Gifford (*J. A. M. A.* **164:**1077-1079 [July 6] 1957) raises several interesting medicolegal questions. 1. It points up a fallacy of interpretation which is commonly made by attorneys but which is less frequently made by medical scientists, that the blood alcohol level which indicates intoxication is 0.15%. In the courtroom there is a tendency on the part of attorneys to believe that all persons having 0.15% or more alcohol in their blood are drunk, whereas those having 0.14% or less are sober. The report of the A. M. A. Committee to Study Problems of Motor Vehicle Accidents (Organization Section, *J. A. M. A.* **124:**1290 [April 29] 1944) establishes a "floor" value of 0.05% in the blood below which it may be fairly presumed that no one is under the influence of alcohol, and a "ceiling" value of 0.15% above which persons may be presumed to be under the influence. Of the intermediate questionable zone they stated that in this "liberal wide zone: alcohol influence *usually* is present, but courts of law are advised to consider the behavior of the individual and circumstances leading to the arrest in making their decision" (italics added). More recently the Committee on Medical Aspects of Automobile Injuries and Deaths recommended that, in the interest of public safety, this "ceiling" value of 0.15% be reduced to 0.05% (Organization Section, *J. A. M. A.* **163:**1149-1150 [March 30] 1957). For Turkel and Gifford to imply that a finding of 0.11% alcohol in the blood establishes sobriety is misleading.

2. A second source of confusion stems from the unreal and meaningless use of blood analysis values reported to the third significant figure. To calculate one's analyses to the thousandth of 1% when the admitted analytical error is ±5% gives a false impression of accuracy. It should be pointed out that in a factor such as alcohol influence which, in man, varies from 0.05 to 0.15% alcohol content of blood, variations of 0.01 or 0.02% have little clinical significance.

3. The generally accepted yardstick for the biochemical estimation of intoxication is the alcohol content of whole blood. The specimens of "heart blood" which Drs. Turkel and Gifford obtained at autopsy were not whole blood but rather blood pooled in the pericardial sac. This consisted of bloody serous fluid contaminated by pericardial fluid. Since it is well established that the concentration of alcohol in serum is 10 to 20% higher than that of whole blood, variations in the relative proportion of serum and cellular components in an autopsy specimen of blood may give rise to wide variations in its alcohol content. Pericardial fluid, as shown by Gifford and Turkel (*J. A. M. A.* **161:**866-868 [June 30] 1956) is highly susceptible to contamination by diffusion from alcohol-rich stomach contents. To obtain uncontaminated heart blood at autopsy is comparatively easy. When one severs the large vessels of the heart, the bloody contents (including clots) may be pressed out and caught in a 4-oz. wide-mouth jar. A specimen so obtained gives a good approximation of whole blood in the heart.

4. The question of postmortem diffusion of alcohol is not new (see Blutalkohol by H. Elbel and F. Schleyer [ed. 2, Stuttgart, Georg, Thieme Verlag, 1956, p. 126] for a review of the European literature since 1935). That the resulting errors are more apparent than real is borne out by an analysis of the 75 cases reported by Turkel and Gifford. Of these, 24 were entirely sober; 5 had been drinking alcoholic liquor but could be fairly presumed not to be under the influence of alcohol; 17 fell into the questionable zone between 0.05 and 0.15%; and 28 could be fairly presumed to be under the influence of intoxicants. In no case would an erroneous diagnosis have been made by relying on "heart blood" values rather than those obtained from femoral blood. In the most aberrant value reported by Turkel and Gifford in which the heart blood concentration was found to be 0.09% higher than that of the femoral blood, the victim was not simply under the influence; he was drunk (0.35%). The authors' argument could have been made much more convincing had they analyzed the stomach contents in their patients in order to establish a direct basis for assuming that the observed disparity was due to diffusion and not to an unduly high proportion of serum in the heart blood or its contamination by pericardial fluid.

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HYPOTHYROIDISM

To the Editor:—As a midwestern physician with an interest in metabolic disease, I am somewhat concerned by certain views expressed in a recent paper entitled "Hypothyroidism" (*J. A. M. A.* **165:**121-124 [Sept. 14] 1957). The author's assertions that hypothyroidism is the most frequent affliction in the Midwest, that exophthalmic goiter may be induced by the administration of exogenous thyroid, and that the most frequent cause of daily headache is hypothyroidism seem open to question. While the insidious onset of myxedema frequently impedes its early diagnosis, the ill-advised use of thyroid substances seems much more prevalent than the disease. There are well-defined criteria for the diagnosis of deficient thyroid function, and thyroid therapy for vague or ill-defined syndromes should be discouraged.

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V 16
1957

THE LEISURE CORNER

LET'S GO BOWLING

Like most pastimes, the game of bowling has kept pace with revolutionary processes. In the beginning, bowling was a crude recreation played with primitive equipment in any available open space. But, as the sport evolved it was transformed from a childish game to that of a sport with universal appeal for people of all manners and ages. Today, many physicians recommend bowling to patients, not only because of the amusement factor but because it is a builder of well-being, for it exercises unused muscles of the body and can be played the year round.

At one time or another, everyone has the urge to throw or roll an object. Relics of the Stone Age depict stones being rolled or thrown at other stones; indeed, the ancient game known as duck-on-the-rock is a forerunner of bowling. History, furthermore, informs us that bowling actually is an ancient and royal sport, engaged in at one time only by members of the aristocracy. During the reign of Henry IV, bowling became so popular in England that public alleys were built in connection with dining establishments.

While skittles, Dutch-rubbers, cloish, and skayles have all had their part in the development of modern bowling, the most closely allied is the game nine-pins. This game originated with the Dutch and was brought by them to American shores in 1623. At that time, nine-pins was bowled on alley beds made of clay. Later on, a single board about 12 in. wide was used as an alley bed; pins were set up in sets of three and in rows of three on a board platform 36 to 48 in. square. The game of nine-pins gained great popularity for many years. As a result of an enactment of a law against the game, a 10th pin was eventually added, changing the set-up from a diamond shape to a triangular system.

Pins used at different periods ranged from 3 to 15 in number and consisted of a variety of shapes, sizes, and arrangements. Alleys or court beds consisted of lawn, clay, slate, and planks 12 in. or more in width and ranging from 20 to 100 ft. in length. One to three balls were permitted in each frame at various stages in the evolution of bowling.

It is interesting to note that Sir Francis Drake was an ardent bowler. One story has it that in 1588, while participating in a bowling match, the famous English sea hero was notified that the Spanish Armada had arrived in the English Channel. Not having vanquished his bowling opponent, he delayed going to sea against the enemy flotilla until the bowling match was won.

On Sept. 9, 1895, the American Bowling Congress was established to promote and elevate the game. The congress formulated a uniform set of playing rules and established regulations to cover the building of bowling alleys and equipment. As a result, bowling today is effectively regulated by the American Bowling Congress and the pastime is considered by many to be the best organized of all sports. The laws of the congress are formulated and distributed at an annual convention held during the tournament season.

Bowling is an intricate skill that requires as much technical aptitude as any other game. The object of bowling is to topple the greatest number of pins with the least number of balls rolled. After bowling a few times, the beginner discovers the fascination of hearing a ball crash into pins and seeing them fall. Bowling should not be regarded as a game of brute strength; it does not consist merely of throwing a ball with all the speed that can be mustered, trusting to luck that the pins will topple. When skillful players compete they know precisely how to achieve desired results. The occasions they fail can often be attributed to faulty footwork, to the time they half-drop a ball, to failure to place it properly on the alley, and to failure to roll the ball at a correct and proper angle. Too much speed or errors in judgment are disadvantages to mar a bowling score. Paradoxically, a bowler with a small stature often appears to have advantages over his heavier, more sturdily built competitor.

A foremost consideration in bowling is the selection of a ball. A ball should fit the hand of an individual just as comfortably as a pair of shoes should fit the feet. Finger holes should be spaced so that it is unnecessary to stretch the hand unnaturally. Neither should finger holes be so close as to make one strain the hand in order to hold the ball firmly and with ease. Unless a ball fits the hand comfortably, it is almost impossible to deliver it easily and properly.

After a properly fitted ball has been selected, the next step is to perfect the stride to the foul line. An experienced bowler can usually give appropriate instructions for the adoption of a comfortable style without straining. In a very short time, this will become a natural part of one's bowling habits. The first or strike ball is most important, and great effort should be made to see that if no strike is accomplished, as large a number of pins as possible are obtained, making the remaining spare shots rela-

tively simple. The weight of pins can generally be determined by watching their action when the ball comes in contact with them. When they are light, you will notice that they jump or raise as they are hit. Consequently, light pins require a slower ball. Heavy pins, on the other hand, call for a trifle more speed. Pins of mixed weight are difficult to knock down because the action of the ball varies.

Keeping score is an important part of the game and it provides a part of the anticipation in the sport. When one becomes familiar with terms such as spare, railroad, cherry pick, tapping, and crossing over mean, interest in the game is enhanced. In general, a game consists of 10 frames. One counts only the actual number of pins knocked down if 10 pins are not made with two balls in the same frame. If a spare is made, a count of 10 plus the number of pins knocked down with the next ball gives a total for a frame. The results of each succeeding frame are continually added until 10 frames have been bowled.

Every physician who has ever taken up bowling knows how enjoyable it can be. While proficiency is a common goal of all bowlers, the score is not necessarily related to the amount of pleasure to be derived. Fellow bowlers invariably laugh when you laugh, moan when you moan, and thrill with you at a successful shot. Bowling makes you feel "you're the tops." You enjoy a leading role, the stage is yours, and all eyes rest upon you. And if there is the slightest bit of "ham" in a bowler, he will derive considerable joy in putting on a humorous act.

Not everyone can be an ace bowler. Most of our country's 20 million bowlers average under 170. Whatever the score, the same full measure of pleasure and physical exhilaration from bowling can be had by all participants. In the final analysis, it is precisely these merits that give the sport its rich flavor. There is more to the game than just felling shiny hunks of maple. There are specific rules to be followed; to violate them is to violate good manners in bowling, and this is a cardinal sin in the sport.

Finally, a few terse "don'ts" about bowling should you decide to take up the game. Do not interfere in any way with a bowler who has taken his stance on an adjoining lane. Do not start when he starts and race him to the foul line. If he is ready to deliver his ball, give him the go-ahead signal and stand completely clear. Do not let bad breaks get you down. As a physician, you frequently utter encouraging advice to your patients. When you go bowling, remember to apply it to yourself. So, roll out the ball and have a good bowling laugh!

MEDICAL FILM REVIEWS

Time and Two Women: 16 mm., color, sound, showing time 18 minutes. Produced in 1957 by Audio Productions, New York, for and procurable on loan from the American Cancer Society, 521 W. 57th St., New York 19.

This film alerts women to the urgency of early detection of uterine cancer and explains the uterine cancer cell examination (the "Pap" smear). It is narrated by Dr. Joe V. Meigs of Boston, who tells the stories of two women who had cancer of the uterus: one who ignored warning signals and saw her doctor too late, and the other whose early cervical cancer was detected in the course of a periodic checkup. The growth of cancer is shown by animated diagrams; and a photomicrograph of a cervical smear, with normal and malignant cells, identifies for the viewer how the pathologist can suspect the presence of cancer by noting cells' structural abnormalities. Details of the routine examination are explained, emphasizing that the patient experiences no discomfort during the procedure. Since the second patient's laboratory report indicated the presence of abnormal cells, she returned the following day, when several small tissue specimens were removed from the cervix. These enabled the pathologist to make a positive diagnosis of cancer. After treatment, she reported for follow-up examination, including smears, for five years, during which she showed no further evidence of disease. The film is concluded with an appeal for women to go to their family physicians once a year for a pelvic examination even though they have no symptoms.

This film should be considered as part of a broad program of professional and public education. At each showing, a doctor should be present to answer questions from the audience; slides of key materials in the film are supplied for projection during the discussion period. At the present time there are not enough trained professional assistants for the pathologists in analyzing specimens taken for cell examination; therefore, the film should be shown only in those areas where the county medical society approves and where pathologists are prepared to read smears. This is an excellent film, clear-cut, pertinent, concise, and very illuminating. The participants perform their parts exceptionally well and the photography is excellent. It is recommended for showing to all women in those areas where facilities for cancer cell examination are available.

V 16
1957

ILLUSTRATED FILM REVIEWS

Illustrated reviews of current films will appear when possible as a regular feature in THE JOURNAL. *They will consist of an introduction by the author followed by a pictorial digest of actual frame enlargements selected as key points of the film.*

RALPH P. CREER, *Director*
Motion Pictures and Medical Television
Council on Scientific Assembly.

TIME AND TWO WOMEN

Joe V. Meigs, M.D., Boston

Seeking to motivate women to adopt the lifesaving habit of health checkups, this film was released as a part of a broad education program which will be undertaken in communities where technical facilities are available for interpreting vaginal smears, and where the county medical societies approve use of the film. The uterine cancer cell examination, the "Pap" smear, is explained in an effort to alert women to the urgency of early detection of uterine cancer.

The film deals with diagnosis of cancer of the uterus with special emphasis on cytology and dramatizes the fate of two women: one who ignored warning signals and saw her doctor too late and the other whose early cervical cancer was detected in the course of a periodic checkup. The written review of this film appears on page 728 of this issue.

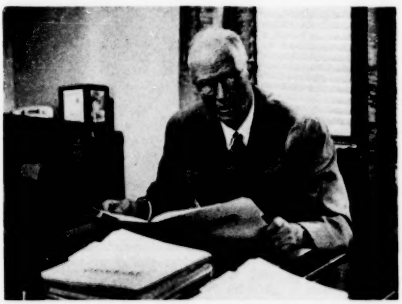

Fig. 1.—Dr. Joe V. Meigs, consulting visiting gynecologist, Vincent Memorial Hospital, Massachusetts General Hospital, Boston, makes the point that 16,000 women die needlessly each year of uterine cancer.

Fig. 2.—First patient confesses that she has not had a checkup in over 19 years. She consults the doctor after months of delay. First symptom was ignored. She now has bleeding, loss of weight, and pains in legs and back.

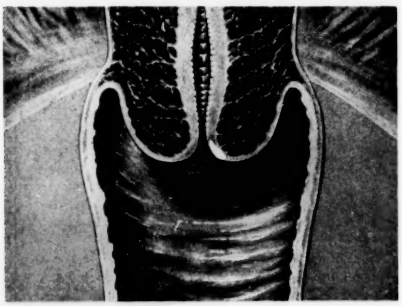

Fig. 3.—After a labeled drawing of the pelvic anatomy, a close-up of the cervix locates the beginning of patient's cancer.

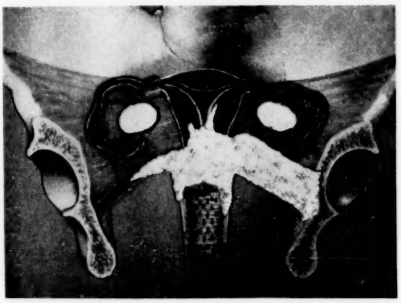

Fig. 4.—Animated sequence shows spread of cancer into endocervix, accompanied by increased bleeding. It continues to show classic pattern of extension into corpus uteri and parametrium. Death followed shortly.

Fig. 5.—Normal process of cell exfoliation is explained. If cancer is present, among those cells will be found malignant cells.

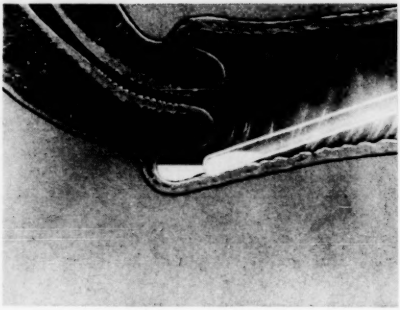

Fig. 6.—On sagittal view is illustrated the technique for removing a sample from the vaginal pool, using suction pipet. This procedure is painless to patient.

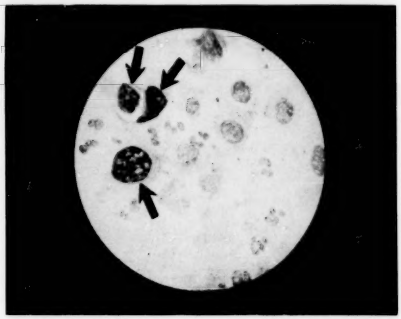

Fig. 7.—By noting cells' structural abnormalities in cervical smear, pathologist can suspect presence of cancer months, or even years, before it produces symptoms.

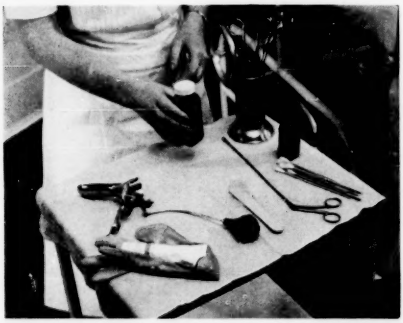

Fig. 8.—During yearly physical checkup of second patient, a cell specimen is taken for interpretation by the pathologist. Instrumentarium is shown and explained.

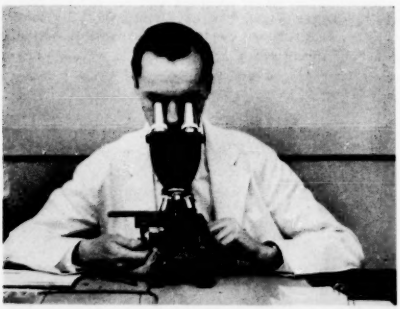

Fig. 9.—Laboratory report indicated presence of abnormal cells. Small tissue specimens removed from cervix confirmed positive diagnosis of cancer. Treatment followed, after which patient showed no further evidence of disease.

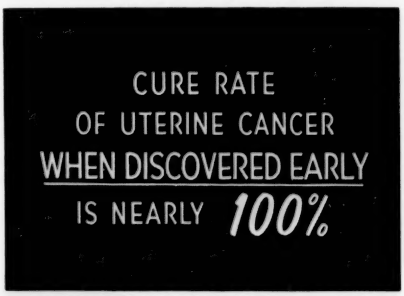

Fig. 10—Goal of physicians is to realize the full potential of curability of uterine cancer, which can be accomplished only with the help of all women.

V 16
1957

MEDICAL LITERATURE ABSTRACTS

INTERNAL MEDICINE

The Treatment of Active Chronic Infectious Hepatitis with ACTH (Corticotrophin) and Cortisone. P. M. Last. M. J. Australia 1:672-676 (May 18) 1957 [Sydney].

The term "active chronic infectious hepatitis" covers a group of patients with fairly well-defined clinical features, a highly characteristic pattern of biochemical findings, and a histological picture of the liver indicating active chronic inflammatory changes. It has been shown that corticotropin and cortisone are unsuccessful when used in the management of hepatic failure in advanced portal cirrhosis. This report is concerned with the effect of these drugs in the active chronic stage of the disease in 9 patients, an earlier report from this unit having presented observations on 34 patients with active chronic infectious hepatitis, of whom 18 died. The 9 patients included 5 men and 4 women. A detailed history was taken in all cases, including the assessment of diet, a search for contact with infectious hepatitis, a history of injections and transfusions, and possible exposure to hepatotoxic agents. Complete physical examination was repeated at intervals, and the patients were weighed regularly. At regular intervals the following biochemical estimations were performed: serum bilirubin content, cephalin flocculation, alkaline phosphatase content (in King-Armstrong units), and serum protein fractionation. The total serum lipids and the blood cholesterol content were determined.

Complete blood examination was performed in all patients on admission to hospital and repeated from time to time. Corticotropin and cortisone therapy were continued for periods ranging from 1 month to 3 years. One patient appears to have completely recovered, 2 have shown moderate improvement, and 3 have shown little or no benefit. Three patients died, but 2 of them improved subjectively while having hormone therapy. With the exception of 1 patient with severe cirrhosis, all patients showed prompt symptomatic improvement, which was not always sustained. No patient appears to have been made worse by hormone therapy. Histological material was obtained in 7 patients before the institution of hormone therapy, in 8 patients subsequently by serial liver biopsy, and at autopsy in the 3 fatal cases. In one patient liver biopsy indicated transient increase in activity, but in the rest no significant histological change could be attributed to hormone therapy. Sudden withdrawal of cortisone may precipitate acute relapse, even though the drug appears to have been producing very little effect. It is concluded that in the treatment of active chronic infective hepatitis, corticotropin and cortisone may produce varying subjective benefit and some improvement in the biochemical finding relating to liver function, but no significant histological change.

Problem of Carcinosarcoma: A Case of Gastric Neoplasm. J. C. Sanchez-Lucas and J. Villar-Bonet. Med. clín. 28:1-5 (Jan.) 1957 (In Spanish) [Barcelona, Spain].

There is a controversy among histopathologists as to whether a carcinosarcoma is a special type of tumor or only a carcinoma of atypical development, having large zones of anaplasia simulating sarcoma. The authors report histological studies of a gastric tumor which seem to prove that carcinosarcoma is not a special type of tumor. A woman 66 years old complained of gastric disorders of 2½ years' duration. The patient lost 12 kg. (26.5 lb.). A tumor could be felt on palpation. Roentgen examination of the stomach showed irregularities of the great curvature and a round shadow. A large tumor occupying the great curvature and several metastases were found at laparotomy. A total gastrectomy with cardioduodenal anastomosis was performed. The stomach contained a large tumor, occupying the great curvature, and a polyp. The histological study of the tumor revealed an adenocarcinoma in one portion of the tumor and a sarcoma in the other. Both portions were continuous through a band of disintegrated epithelial cords extending from the adenocarcinoma into the sarcoma portion. The polyp showed a transformation into an adenocarcinoma. The metastases were exclusively of the epithelial type. The findings in this case support the theory that carcinosarcoma is a carcinoma of atypical growth. Disintegration of the epithelial cords seems to be the causal factor of the transformation into sarcoma.

The place of publication of the periodicals appears in brackets preceding each abstract.

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Hyperfunction and Hypofunction of Endocrine Glands and Diabetes Mellitus. P. G. Skillern and E. P. McCullagh. J. Indiana M. A. **50**:701-709 (June) 1957 [Indianapolis].

Although the faulty carbohydrate metabolism that characterizes diabetes mellitus is traceable most frequently to dysfunction of the pancreas and resultant deficiency of insulin, other factors play important roles in carbohydrate metabolism, and their action sometimes causes diabetes or affects an existing diabetes. Diabetes mellitus may be produced by hyperfunctioning tumors of the pituitary, adrenal cortex, adrenal medulla, and thyroid and by hyperplasia of the adrenal cortex and thyroid. After surgical correction of the pathological condition, the diabetes may or may not be reversible. The authors cite patients with acromegaly in whom diabetes became reversed spontaneously, following treatment with cobalt teletherapy, or after treatment with estrogens. The diabetes due to Cushing's syndrome is usually corrected by surgical removal of the tumor or hyperplasia of the adrenal cortex.

One patient with Cushing's syndrome and pituitary tumor had a temporary remission of the diabetes after cobalt irradiation of the pituitary. The diabetes mellitus of 1 patient with pheochromocytoma, who was admitted in diabetic acidosis, disappeared after removal of the pheochromocytoma. The occurrence of diabetes mellitus in 2 patients with aldosteronism due to adrenal tumor suggests that a hormone may be secreted which has some corticoid action. Marked hyperglycemia during the administration of cortisone or permanent diabetes mellitus following the administration of exogenous cortisone is probably due to a preexisting latent or mild diabetes mellitus. A diabetic glucose-tolerance curve in a patient with hyperthyroidism may or may not be due to diabetes mellitus. An elevated fasting blood sugar level in the presence of hyperthyroidism is due to diabetes mellitus.

Generalized Intestinal Polyposis with Melanoplakia of Lips, Oral Mucosa and Fingers (Peutz-Jeghers Syndrome). V. R. Richterich and H. J. Kaufmann. Schweiz. med. Wchnschr. **87**:552-558 (May 11) 1957 (In German) [Basel, Switzerland].

The concept of intestinal polyposis includes a number of disease entities that differ with regard to etiology and clinical aspects. Their common characteristic is the formation of multiple intestinal polyps of a precancerous nature. Realization of the possibility of cancerous degeneration of the polyps led to more intensive study of the forms that had been known for some time and to the discovery of new and little-known entities. The author lists 7 different forms of intestinal polyposis: 4 sporadically occurring nonfamilial, acquired forms and 3 hereditary familial forms. This report is concerned with one of the hereditary forms, the Peutz-Jeghers syndrome. When Peutz first described this entity in 1921, he called attention to the triad of heredity, pigmentation, and polyposis. More general attention was called to this form of intestinal polyposis by Jeghers and co-workers in 1949. The author found that so far 12 families have been reported in which more than 1 member was found to have the Peutz syndrome. Diagrams of the genealogical tree of 3 of these families show the appearance of the Peutz syndrome in successive generations.

The pigmentation appears in the form of melanoplakia in the perioral region, the oral mucosa, the fingers and toes. The spots on and around the lips are generally small and resemble freckles; those of the oral mucosa are usually larger. In some patients these spots are found also around the eyes and nose. On the hands and feet the spots show interdigital and sometimes volar or dorsal localization. In the differential diagnosis of the melanoplakial phakomatoses, endocrinopathies and nutritional disease must be ruled out. The most important symptom of the Peutz syndrome is polyposis of the small intestine particularly in the ileum and jejunum. In about half of the carefully examined patients polyps were found also in the stomach, and in about one third of the patients the colon and rectum were involved. In children this progressive disorder becomes manifest in recurrent episodes of invagination or gastrointestinal bleeding. In adults, signs of intestinal malignancy, such as bleeding and stricture, are frequently the first symptoms. The precancerous nature of the polyps is proved by the frequent occurrence of carcinoma in young adults and by the multifocal development of cancers. A dominant pleiotropic gene with high penetrance seems to be the cause of this disorder.

Aging of Arteries in Relation to Hypertension. J. Conway and K. S. Smith. Circulation **15**:827-835 (June) 1957 [New York].

A new clinical method has been devised by the authors for the qualitative assessment of the elastic properties of the arterial reservoir. The method depends on changes in pulse pressure that occur after the inhalation of amyl nitrite as the blood pressure falls without change in heart rate. The test was applied to 16 normal young men and women between the ages of 17 and 32 years and to 52 patients with hypertension. Little change in pulse pressure accompanied the fall in diastolic pressure in the normal person after the inhalation of amyl nitrite (15% of the fall in diastolic pressure). In the hypertensive group, there were 15 patients with systolic or arteriosclerotic hypertension. In these patients the reduction in pulse pressure after the inhalation of amyl nitrite was 116% of the simultaneous fall in diastolic pressure. The remain-

V 16
1957

ing 37 patients with hypertension were grouped according to their responses to the elasticity test. In 20 patients the response was within the normal limits, and the average fall in pulse pressure was 28% of the fall in diastolic pressure—these patients were believed to have normally elastic arteries. In 17 patients the fall in pulse pressure was 96% of the fall in diastolic pressure, and it did not differ significantly from the response of the arteriosclerotic patients. They were therefore believed to have inelastic arteries.

Clinical differences between the patients with elastic and those with inelastic arteries strongly suggested that these patients had in fact different diseases. In one group the elevation of pressure appears to be the consequence of physiological aging of arteries and in the other group hypertension is imposed on a normal elastic arterial system. Those with elastic arteries were younger and had a higher initial diastolic blood pressure than those with inelastic arteries. The difference in age and in severity of hypertension suggests that the separation of hypertension into these functional types may be of considerable clinical value, and it offers some prospect of discerning the true nature of the disorder.

Anticoagulants in Acute Myocardial Infarction with a Comparative Analysis of Prognostic Factors. H. D. Chieffo. J. M. Soc. New Jersey **54**:266-271 (June) 1957 [Trenton].

This study was originally undertaken to determine whether the anticlotting agents should be used routinely in acute infarction of the heart. All patients admitted to St. Francis Hospital in Jersey City, from January, 1950, to December, 1955, with acute myocardial infarction (confirmed by serial electrocardiograms or autopsy) who survived the initial 24 hours of hospitalization were included in this review. There were 140 patients. Anticoagulants were administered at the discretion of the attending physicians. They used these drugs most often in the poor-risk type of patient. A few practitioners, however, did use anticoagulants routinely. There were 63 patients treated with these drugs (group A) and 77 patients who did not receive them (group B). There were 9 deaths among the 63 patients treated with anticoagulants (14%) and 17 deaths among the 77 patients (22%) not treated with anticoagulants. In the group treated with anticoagulants there was a trend toward reduction of mortality in those with shock, congestive heart failure, previous myocardial infarction, hypertension, thromboembolism, diabetes mellitus, and pulmonary and renal disease. It is concluded that anticoagulants should be used in patients with these associated conditions.

The incidence of thromboembolic complications was equally low in patients who received anticoagulants as in those who did not. The difficulties involved in the diagnosis of this disorder may to some extent explain the low incidence noted. There were 2 deaths due to hemorrhage induced by anticoagulant drugs, and for this reason they must be used with extreme caution. They should not be used when there are contraindications such as peptic ulcer and other ulcerative lesions of the gastrointestinal tract, liver or renal disease, and hemorrhagic disorders. Anticoagulants should not be used routinely in patients with mild attacks of myocardial infarction who have no complications.

Experimental Studies of Mechanism of Action of Fat Embolism. E. Krönke. Arch. klin Chir. **285**:308-340 (No. 3) 1957 (In German) [Berlin].

Artificial fat embolism was produced by intravenous injections in cats and dogs of a proprietary preparation of iodine in vegetable oil (iodipin), paraffin oil, and a suspension of Lycopodium spores. Graphic presentations of blood pressure values in the systemic and pulmonary circulations and of the respiratory changes occurring in the course of the animal experiments with iodipin, which remains locked up within the fine pulmonary vessels, revealed that death occurred only with complete obstruction of the pulmonary circulation. Reflex phenomena were produced not by oil embolism of the pulmonary vessels but by solid bodies, such as the Lycopodium spores.

The circulatory disturbances in pulmonary fat embolism are of a purely hydraulic nature and are the result of narrowing of the pulmonary vessels; they have no relation to the clinical aspect of shock. As a rule, pulmonary fat embolism may be considered harmless; it may gain importance only as an additional cause of death when it is associated with traumatic shock and other secondary injuries and disorders. In contrast, generalized fat embolism may exert a fatal effect when it affects vital areas of the central nervous system. Generalized fat embolism is produced predominantly by an overload placed on the pulmonary vessels by the fat emboli, i. e., by massive pulmonary embolization in the presence of normal heart action. In the animal experiments severe manifestations of shock and death were elicited by intra-arterial injections of smaller amounts of fat into the carotid artery. The author believes that traumatic fat embolism becomes significant mainly by the involvement of the central nervous system.

The conclusions drawn from these observations with respect to therapy of fat embolism in man are that in injured persons the frequently associated state of shock should be combated not with measures aimed at increasing the blood pressures but with agents which exert a damping effect on the autonomic nervous system, simultaneously inhibit the biological occurrence of lipase activity, and exert a mild depressive effect on the blood pres-

sure. The embedded free fat is caught by the receptive pulmonary vessels, in which it is harmless. The concept of intoxication was not confirmed by the animal experiments. A reflex mechanism was not elicited by the obstruction of the renal vessels with fat emboli, but the latter caused only mechanical disturbances corresponding with the extent of the obstructed vascular area, similar to the disturbances elicited in the lung by obstruction of vessels with fat emboli.

The Postbulbar Duodenal Ulcer. J. Shaiken and H. J. Kanin. Am. J. Gastroenterol. **27**:557-565 (June) 1957 [New York].

The authors observed 21 patients with postbulbar duodenal ulcer during a period of 20 years, and they describe the histories of 7 of these patients. The diagnosis was made in 5 of the patients on the basis of roentgenologic findings, in 1 at surgery and in 1 at autopsy. The most striking aspect of the postbulbar ulcer is the tendency to repeated hemorrhages. Five of these patients had gross bleeding. One patients had 9 hemorrhages, another 5, and a third patient 4. Most of the hemorrhages were profuse. Pain is the most frequent complaint. It differs little from that found in patients with bulbar duodenal ulcers, but it may be associated with fulness or bloatedness. It has also been noted that the pain tends to radiate to the back and to the right scapular region and that the ulcer shows a tendency to pentrate into the pancreas. Food does not seem to ease the pain as in the usual bulbar ulcer. Nocturnal pain has been noted in a high percentage of patients.

One of the patients presented had pain that was intractable to repeated courses of medical treatment. He was relieved by surgical treatment. Another patient with good clinical response to medical treatment subsequently showed signs of severe stenosis. He refused surgical treatment. Only 1 patient responsed to medical treatment. The postbulbar ulcer is often intractable as the result of walled-off perforation. Surgical treatment is to be preferred in the patient who has bled, who has intractable pain, or who shows evidence of obstruction.

The Role of Antibiotics in the Present Status and the Development of the Disease Combination of Diabetes and Pulmonary Tuberculosis (With Reference to 41 Cases). C. Mattei, A. M. Recordier, P. Laval and others. Rev. tuberc., Paris **21**:237-255 (March) 1957 (In French) [Paris].

Most estimates set the frequency of tuberculosis in patients with diabetes at from 2% to 4%. Persons between the ages of 40 and 60 years are those most subject to diabetes alone, and it is in these patients, especially those between 40 and 50, that tuberculosis occurs most frequently. The authors have collected 41 cases in which the 2 diseases were associated since 1947. Some came from hospitals and some from private practice, but all had points of similarity that justified their inclusion in a single study. Thus all the patients required hospital care at some time during the course of their illness; all could be given the benefit of recent forms of therapy—antibiotic or surgical; and all were observed and treated during a period when normal economic and dietary conditions had been uniformly reestablished throughout France.

Analysis of the findings showed that diabetes appeared before tuberculosis in most of the patients and that, even in the rare cases in which the contrary seemed to be true, the diabetes probably existed first but was not recognized until later. The two conditions often seemed to have a common beginning and to have been detected at the same time. Once the association is established, the two diseases progress concurrently, and any aggravation of one is immediately accompanied by aggravation of the other. Both should, therefore, be treated rapidly, simultaneously, and energetically. Denutrition, which appears in many adult or aged tuberculous diabetic patients, as well as in children with diabetes, is a factor of great importance because it seems to control to a certain extent the anatomic form, the clinical manifestations, and the course of the tuberculosis. Pulmonary tuberculosis, for its part, is definitely progressive in diabetic patients, accentuating their denutrition and profoundly affecting their general condition. The tuberculous lesions are more often ulcerocaseous than fibrotic in character and frequently appear in both lungs. Treatment of the tuberculosis requires the prolonged use of antibiotics in generous daily doses, with adequate rest and sanatorium care; medical or surgical collapse therapy and operation as indicated; and careful dietary management. Patients with tuberculosis require a rich diet with an abundance of protein, while those with diabetes must have one that is restricted in certain respects. These contradictory requirements can be met by two types of diets, one supplying 3,000 calories with 250 Gm. of glucides and the other supplying 2,500 calories with from 180 to 200 Gm. of glucides. The first is intended for patients with denutrition who need to gain weight and who are in good balance as a result of insulin therapy; the second is for patients (1) whose diabetes is benign enough to be controlled simply by adhering to the diet, or (2) whose tolerance for carbohydrates is poor. Insulin therapy is almost always a requisite with these diets, and neither should be used during periods of severe acidosis, which must be treated by a sharply restricted diet and intensive insulin therapy until the proper balance is restored.

The therapeutic results in patients with associated tuberculosis and diabetes have been improved by application of these priciples, but there is still

V 16
1957

room for further improvement. Patients with diabetes should be systematically investigated for tuberculosis, so that antituberculosis treatment can be started early if it is needed and so that efforts can be made to combat alcoholism, which is often present and which is responsible for most of the therapeutic failures. Six of the 41 patients in this series died, 3 of causes other than tuberculosis (gangrene of the lower limbs, hemochromatosis), 2 of fulminating hemoptysis, and 1, who was a heavy drinker and had cirrhosis, of progressing tuberculosis. Progression of their pulmonary tuberculosis occurred in spite of treatment in 3 patients with severe diabetes complicated by denutrition. One patient was quickly lost to follow-up; 23 were in excellent condition when last seen; and the remaining 8 appeared to be well on the way to a lasting cure.

The Course of Nonspecific Ulcerative Colitis: Review of Twenty Years' Experience and Late Results. B. M. Banks, B. I. Korelitz and L. Zetzel. Gastroenterology **32**:983-1011 (June) 1957 [Baltimore].

A series of 245 patients with nonspecific ulcerative colitis or its complications had 507 admissions to hospital between 1931 and 1950; 115 of these patients were hospitalized within the first year of their illness. All but one had a follow-up of an average period of 12.1 years; 178 (73%) of these have been followed 11 years or more from the onset of the disease. The colitis was severe or extremely serious, associated with toxemia, hemorrhage, perforation, or other grave complications in 64% of the patients. In 152 patients the disease first appeared before the age of 30 and in 24 after the age of 50. Ulcerative colitis occurred in 2 or more members of the immediate family in 9 cases. Diarrhea was the most frequent complaint, but in 16 patients the disease was first manifested by constipation. Blood in the stools was noted in 208 patients and was found in an additional 16 at sigmoidoscopy. The diagnosis of ulcerative colitis was confirmed by surgery in 9 patients with no indication of bleeding, by postmortem examination in 2, and by radiography and/or sigmoidoscopy in 10. Abdominal cramps were reported by 159 patients. The liver was palpable in 13% and the spleen in 1% of the patients. During later admissions, clubbing of the fingers was found in 7%, erythema nodosum in 5%, and evidence of arthritis in 16%. A total of 265 influencing factors was listed for one or more recurrences in 183 patients. Situations involving emotional stress were the most frequently mentioned factors associated with the onset and more commonly with recurrences of the disease. Upper respiratory infections, surgical procedures, unrelated serious illness, and pregnancy were frequently implicated. The descending colon was found to be involved in 117 of the 222 patients who had barium enema x-ray studies, segmental areas including the ascending colon in 17 (8%), and the entire colon in 69 (31%). Serious colonic complications appeared in 5 to 10% of the patients, skin lesions in 13%, and arthritis in 16%.

Patients as a rule received a general supportive type of medical treatment. Antibiotic and chemotherapeutic agents were slightly more effective than the supportive measures. The incidence of bacterial, hemorrhagic, and certain systemic complications was not reduced by these agents. Definitive surgical treatment was required by 84 patients (34% of the total series). Difficulties associated with the stoma led to one or more corrective operations in 50% of patients with an ileostomy. This constituted an important cause of disability and death. Secondary subtotal or total colectomy, combined one-stage ileostomy and subtotal colectomy, was performed likewise, without a surgical fatality. The highest surgical mortality occurred in the first year of the disease. Minor and major postoperative complications were frequent after all types of surgery. Segmental colitis or colitis of the ascending colon ran a prolonged course, characterized by recurring periodic activity, a high incidence of systemic complications, a multiplicity of surgical procedures, and a guarded long-range prognosis. The known incidence of carcinoma is 3.7% of the entire series. Patients who have been affected with colitis for more than 10 years are especially susceptible to this complication. Eighty-seven pregnancies were recorded as occurring in close relationship with ulcerative colitis; 72 were carried to term, with only 2 stillbirths. The most favorable prognosis prevailed when the pregnancy was initiated while the colitis was in remission. The known status of the 244 patients with nonspecific ulcerative colitis permits these approximations to be made: 20% have remained well in terms of their colitis; 20% have occasionally mild recurrences; 20% experience serious exacerbations; 17% are relatively asymptomatic after definitive surgery; 3% have a malfunctioning ileostomy; and 20% are dead.

The Effect of Permanent Anticoagulant Therapy on Symptoms and Mortality in Angina Pectoris. B. A. Waaler. Acta med. scandinav. **157**:289-306 (No. 4) 1957 (In English) [Stockholm].

Of 275 patients, 37 women and 238 men, between the ages of 35 and 82 years with angina pectoris probably caused by coronary atherosclerosis, 183 were treated with bishydroxycoumarin (Dicumarol) and 92 were treated with phenylindanedione. The duration of treatment varied from less than 1 year to more than 5 years. The results obtained in these patients were compared with those in 6,882 patients with angina pectoris not treated with anticoagulants and reported on by Block and co-workers (J. A. M. A. **150**:259 [Sept. 27] 1952). The mortality in the group

treated with anticoagulants was significantly lower than that in the group not so treated. The mortality in the treated group also compared favorably with other statistics on the prognosis in patients with coronary artery disease not treated with anticoagulants. Of the 275 patients treated with anticoagulants, the interval between diagnosis of angina pectoris and the institution of anticoagulant therapy was known in 266; this interval was less than 1 year in 134 and more than 1 year (with an average duration of symptoms of more than 4 years before the start of therapy) in 132. The mortality per year in these two groups was 2% and 8.1%, respectively, i. e., a significantly reduced mortality in the group treated within 1 year after the diagnosis, whereas statistics on the natural course of angina pectoris showed the highest mortality in the first year. The incidence of myocardial infarction during treatment with anticoagulants was significantly lower than in a corresponding period before treatment. The anginal distress, as measured by the effort tolerance, improved greatly in 38% of the patients and showed some improvement in an additional 12%. Improvement occurred gradually, reaching a maximum after 1 year of treatment and remaining fairly constant thereafter.

These results indicate that long-term anticoagulant therapy is effective in patients with angina pectoris. Among various factors which might possibly have influenced the course of the disease besides the anticoagulant itself, the placebo effect, psychosomatic effects initiated by the medical attention and reassurance of the patient, weight reduction, reduced tobacco consumption, and other changes in mode of life have been listed. It was not possible to draw definite conclusions concerning the relative importance of these factors, but weight reduction seems to improve the prognosis. The incidence of clinically significant hemorrhages caused by the anticoagulants alone was about 1 per 27 treatment-years, or about 1 per 20 treatment-years if patients with other causes of hemorrhage, such as peptic ulcer or ureteral stone, were also included.

The Clinical Use of Radioisotopes in the Differential Diagnosis of Anemia. W. L. Hughes, P. C. Johnson, E. S. Berger and R. M. Bird. South M. J. **50**:709-712 (June) 1957 [Birmingham, Ala.].

Cobalt-60-labeled vitamin B_{12} can be given orally and its absorption from the gastrointestinal tract measured. The basic defect in pernicious anemia is thought to be a permanent deficiency of gastric intrinsic factor so that adequate absorption of vitamin B_{12} from the gastrointestinal tract fails to occur. Since this defect is not influenced by parenterally administered vitamin B_{12}, the demonstration of faulty absorption of vitamin B_{12} from the gastrointestinal tract establishes the diagnosis of pernicious anemia despite previous treatment. The use of tagged cobalt as a diagnostic tool is illustrated by the cases of 3 men between the ages of 57 and 65 years. The first patient with progressive weakness and paresthesias in his lower legs, weight loss, and anemia, had been given bimonthly injections of vitamin B_{12} for 1 year, although a definite diagnosis had not been made. The clear-cut difference between the absorption of Co^{60}-labeled vitamin B_{12} with and without normal gastric juice made it possible to establish a diagnosis of pernicious anemia despite the long administration of the vitamin intramuscularly. The test thus solved a therapeutic problem, and the definite diagnosis was established without the need of withholding vitamin B_{12} and without the resultant risk of a neurological relapse. The second patient, with weakness and postprandial epigastric pain of 4 years' duration and paresthesias of the hands and feet of 4 months' duration, had sporadically been given oral preparations of iron and a variety of vitamins. The previous administration of hematinics, while failing to correct the hematological and neurological findings, had made it impossible to establish an accurate diagnosis by the examination of the blood or bone marrow. Co^{60}-labeled vitamin B_{12} excretion studies established the diagnosis of pernicious anemia, and on parenteral vitamin B_{12} therapy the patient obtained a complete hematological and neurological remission. In the third patient, with progressive weakness and attacks of sore mouth and tongue for 5 years, who had received irregularly intramuscular injections of both liver extract and vitamin B_{12}, the Co^{60}-labeled vitamin B_{12} excretion studies made it possible to establish that the patient had so-called nutritional macrocytic anemia but not pernicious anemia. It was interesting to note that subsequent studies in this patient revealed none of the more conventional laboratory evidence of impaired gastrointestinal motility and absorption, which are anticipated in a sprue-like syndrome. The patient made a dramatic recovery on administration of 10 mg. of folic acid daily.

Erythrocytes may be labeled with chromium-51 and be reinjected into the donor. One may then conveniently measure the rate of disappearance of the radioactivity from the circulation. From these data one can infer the rate of hemolysis. In a 13-year-old boy with attacks of anorexia, fever, and jaundice, increased erythrocytic fragility and hemolysis was demonstrated by estimation of Cr^{51}-labeled erythrocyte survival, and the diagnosis of congenital spherocytosis was made. The ability to demonstrate a hemolytic process despite the absence of anemia was of importance in the decision to perform splenectomy. The failure to demonstrate a shortened erythrocyte survival time by the Cr^{51} technique was interpreted as evidence against a hemolytic anemia and hence a contraindication to splenectomy in a 36-year-old man with exertional dyspnea and easy bruising of 1 year's duration. The subsequent fail-

V 16
1957

ure to respond to splenectomy supported this view. In a third patient, with progressive weakness, dyspnea, hepatosplenomegaly, pancytopenia, and myelofibrosis of the bone marrow, Cr ^{51}-labeled red blood cell survival studies revealed increased hemolysis. Although the cause of the hemolysis was never determined, the apparent improvement after splenectomy would indicate that the pancytopenia was corrected by the operation. The evaluation of known anemias has often been an insoluble problem because of the widespread and casual use of proprietary compounds containing vitamin B_{12} and folic acid. Similarly, a search for a hemolytic element in anemia often has been unrewarding at a given moment. Tagged cobalt and chromium offer new diagnostic tools in such problems.

Acute Renal Failure: Experiences with Conservative and Hemodialysis Treatment in 32 Consecutive Cases. J. H. Thaysen, S. Gjørup and S.-A. Killmann. Dan. med. bull. 4:73-92 (May) 1957 (In English) [Copenhagen].

From May, 1955, to November, 1956, 32 patients with acute uremia were admitted to medical department A of the Rigshospital. Three patients died within 24 hours, 3 had a total anuria due to bilateral ureteral obstruction, and 26 had oliguria due to acute ischemic renal failure or other renal disease. Of the 26 patients, 18 were treated only conservatively, with 8 deaths. In 8 patients conservative treatment was supplemented by hemodialysis; 5 had acute ischemic renal failure, 1 patient had bilateral cortical necrosis, 1 had an actue exacerbation of chronic glomerulonephritis, and 1 had transitory oliguria due to chronic pyelonephritis. Three of the dialyzed patients died. The importance of the primary disease for the ultimate prognosis is stressed. Rational treatment prevents the development of hyperpotassemia, cerebral and pulmonary edema, and severe uremic intoxication, formerly frequent causes of death. Good conservative therapy is fundamental in the treatment of acute renal failure. Supplementary hemodialysis should probably be carried out on relatively liberal indications in order to prevent grave complications.

Leukaemia. R. B. Scott. Lancet 1:1162-1167 (June 8) 1957 [London].

The 2 common forms of chronic leukemia stand in sharp contrast: whereas the myeloid variety follows a stereotyped and constant pattern, the lymphatic may assume any of a dozen disguises. This paper is concerned with the lymphatic form of leukemia, which is marked by proliferation of lymphoid cells throughout the blood-forming organs; the cellular elements are usually mature; in the lymph nodes the proliferation is diffusely spread throughout the medulla; and the destruction and infiltration of the stroma, the histological signs of malignancy, are lacking. Most clinicians in Britain agree that it is the commonest type of leukemia seen today. It is likely that there has been a relatively greater increase in its incidence than in that of other types. There has always been a greater number of males affected than females, and in the present series of 227 patients, males made up 67.4% and females 32.6%. In 80% of the patients the first symptoms appeared between the ages of 40 and 70. The mean age at onset for the whole series was 58.2 years.

When the patient is first seen, the physical signs of the leukemia fall into 1 of 5 categories. The first is what may be called the "classic" form; in this, generalized enlargement of superficial lymph nodes is usually associated with palpable enlargement of the liver and spleen. In the present series the disease assumed this form in 73.2% of the patients. The second category is the splenomegalic type: these patients often complain of abdominal pain, and physical examination reveals massive splenomegaly of the order usually associated with chronic myeloid leukemia; there is commonly a lesser grade of hepatic enlargement; and no superficial lymph nodes are palpable. In this series 11.8% of the patients presented with this form. The third group includes patients who display enlargement of the lymph nodes of one superficial group or some other solitary tumor of lymphoid tissue. The onset was of this pattern in 7.3% of these patients. Specific skin infiltrations, although not rare, are seldom the presenting manifestation, only 2 of these patients (0.8%) coming into this group. In 6.9% no physical signs of disease were evident, and the characteristic changes in the blood were the only leukemic manifestations. Less common clinical features of chronic lymphatic leukemia fall into 2 groups; those depending on leukemic infiltrations in unusual sites, and those presumed to be the result of immunological disturbance.

As one watches patients with chronic lymphatic leukemia through their years of illness, it is possible to discern some pattern in the course of the disease. Usually there is a period of reasonable health, during which the lymph nodes and spleen increase slowly in size and the leukocyte count creeps upward, although the hemoglobin level and the platelet count are well maintained; then, with various degrees of abruptness, the advancing lymphoid infiltration determines bone marrow failure, the hemoglobin level falls, a hemorrhagic state appears, and, unless life is maintained by repeated transfusions, death follows from anemia and exhaustion. During the first phase, radiotherapy or chemotherapy will lower the leukocyte count and cause the lymph nodes to regress; in the second phase treatment is seldom of avail. At any time this course may be interrupted by the effects of infiltrations in such tissues as bone and skin, by infection, or by the appearance of one of the autoimmune syndromes. The length of the first phase varies from a few months to 8 or 10 years,

and many of the older patients die with, rather than from, the disease. Rarely a patient appears to recover. In this series, a woman of 80 died of bronchopneumonia 10 years after the onset of chronic lymphatic leukemia; at the time of her death there were no enlarged lymph nodes nor splenomegaly, and the blood cell count was normal. In the present series the mean duration of the disease in 118 patients known to have died was 36.7 months. Survivals of 40 months in 30 untreated patients and 42 months in 50 irradiated patients again underline the fact that treatment has not improved the outlook in this disease.

The Complement Fixation Test in the Diagnosis of Amebiasis. C. G. Spicknall, J. Bosicevich, R. L. Black and others. Gastroenterology **32**:1131-1142 (June) 1957 [Baltimore].

The records of 1,370 patients were reviewed on whom complement-fixation tests for amebiasis were performed. This test was found particularly valuable in the diagnosis of amebic liver involvement. The test in this complication of amebiasis was found negative in only 1 patient and doubtful-positive in 2 of 25 studied. The test was positive in intestinal amebiasis in 17.5% of the patients. Of 8 patients with amebic granuloma, only 1 had a positive test; 2 of these patients had Entamoeba histolytica in their stools and 2 had E. histolytica in the biopsy specimens from rectal lesions. The diagnosis of amebic colitis and its complications is difficult to establish. E. histolytica may not be found in amebic granuloma, in amebic hepatitis and abscess, and even in some cases of acute amebic colitis. The appearance of the lesions does not differentiate between amebic infection and other ulcerative diseases of the colon, even when there are ulcerations of the rectal mucosa. The appearance of lesions on roentgenologic study is no certain means of determining the causes of these lesions, whereas barium studies of the colon may suggest amebic disease.

Acute-Phase Protein in Rheumatic Fever. S. Rahman and P. Mozziconacci. Semaine hôp. Paris **34**:2179-2186 (June 6) 1957 (In French) [Paris].

C-reactive protein is present at the beginning of an attack of rheumatic fever. The authors observed 52 patients with rheumatic fever and 13 patients with diseases of the same group in children aged 3 to 15. Acute-phase protein disappeared after 1 week of successful therapy with cortisone and prednisone. It reappeared in 15 patients during treatment with aspirin following the hormonal treatment. Six of the patients had a progressive type of rheumatic fever. The reappearance of C-reactive protein probably means that rheumatic fever is still active. The reactivation of rheumatic fever in 95% of cases occurred in the course of 4 weeks after the end of treatment. There was no C-reactive protein in patients with chorea. The presence of C-reactive protein does not establish that the rheumatic fever is active, its absence cannot reject its diagnosis. There is a threshold of the rheumatic fever progress beyond which C-reactive protein reappears. Clinicians found it present in rheumatic fever, glomerulonephritis, lipoid nephrosis, and in virus diseases such as measles, varicella, epidemic hepatitis, and primary infection with tuberculosis. The authors found it present also in leukemia and in typhoid. Stollerman presumes that disappearance of C-reactive protein is due to the hormone action on the inflammation, of which C-reactive protein is a manifestation. The disappearance of C-reactive protein means that rheumatic process is arrested but is not eliminated. The determination of the erythrocyte sedimentation rate, of the presence of C-reactive protein, of fibrinemia, and of the amount of mucoproteins are methods each of which determines the progress of the rheumatic fever. Any one method cannot be used to the exclusion of others. All of them help to observe the progress of the rheumatic process.

Effect of Prednisone in Pulmonary Silicosis. A. Slaviero and E. Gaffuri. Minerva med. **48**:1522-1524 (April 28) 1957 (In Italian) [Turin, Italy].

Sixteen patients with silicosis who presented severe respiratory symptoms and who had not derived much benefit from the usual therapy were treated with prednisone for 31 days. The initial dose was of 30 to 40 mg. per day. A maintenance dose was administered as soon as the patients started to improve, and subsequently the dose was gradually diminished. Streptomycin was also administered to some patients in whom latent tuberculosis was suspected. Prednisone therapy had to be discontinued in 1 patient who presented a marked increase in blood pressure. The results were very good in 5 patients; their general condition improved and their respiratory symptoms regressed almost completely. Dyspnea at rest disappeared in 5 patients, and dyspnea on exertion diminished in 5 other patients. The drug had no effect on 3 patients with severe emphysema, 1 of them with chronic cor pulmonale. The drug had a beneficial effect on the cough of these 3 patients. Cough disappeared in 9 other patients and was checked markedly in the remaining 3. Roentgenologic examination did not show any changes.

Modern Treatment of Polycythemia Rubra Vera. U. Cardone and F. Galeazzi. Policlinico (sez. med.) **64**:630-637 (April) 1957 (In Italian) [Rome].

Eight patients 32 to 65 years old with polycythemia vera were subjected to repeated removal of blood and to infusions of one-half or one-third of the amount of blood removed with fresh plasma from young donors. One patient had been treated

V 16
1957

previously with roentgen therapy and another with nitrogen mustard. Some patients already had marked symptoms of the disease and could do little or no work. The treatment was beneficial to all patients. The subjective condition of the patients started to improve after 2 or 3 transfusions. All symptoms had disappeared at the end of the treatment. The size of the spleen was reduced markedly and in some patients returned to normal. The patients could return to their work after the treatment. The hemoglobin level and blood pressure became normal in some patients. The effect of the treatment lasted for some months in some of the patients and for 1 to 2 years in the others. When the hematocrit and red blood cell values increased and the subjective symptoms returned the patients were subjected to a new course of treatment until their condition became normal. The treatment was repeated in one female patient once a year, and she was able to carry on with her occupation for the whole year. The treatment has not caused any complication.

Acute Barbiturate Intoxication. T. Koppanyi. J. Forensic Med. 4:65-71 (April-June) 1957 [Cape Town, South Africa].

Barbiturate coma is a form of anesthesia (light or deep) with varying degrees of areflexia, muscular relaxation, and other signs and symptoms characteristic of anesthesia. Small pupils indicate lighter and large pupils deep anesthesia. Mydriasis, therefore, is an unfavorable sign in barbiturate intoxication and is usually accompanied by marked decrease of the respiratory minute volume, by cyanosis, and very often by a fall in blood pressure and hypothermia. Hyperthermia, which is not infrequently seen in patients who have taken toxic amounts of barbiturates, is usually due to secondary infections, particularly pneumonia. In such cases, moist rales are discovered in the lower lung fields, which progress to bronchopneumonia with consolidation. Gross overdoses of barbiturates kill by direct depression of the respiratory center, and death may occur within an hour after oral ingestion. The majority of the patients do not take this absolute fatal dose, but only a fraction thereof, and may survive in an anesthetized state for 24 hours or more without any treatment. Then they die of respiratory and/or circulatory depression, pulmonary and cerebral edema, or pneumonia. Neither the symptoms nor the postmortem changes of organs and tissues differentiate barbiturate poisoning from other forms of coma or fatal central depression. The differential diagnosis therefore requires chemical identification of barbiturates in the blood and the urine during life, or in organs, particularly the liver and the brain at autopsy. The gastrointestinal contents should be saved for chemical analysis, because it is possible that small amounts of unabsorbed barbiturates are present, particularly when taken in tablet form.

Methods for the chemical identification of barbiturates in blood and tissue are described. The treatment of barbiturate poisoning may be symptomatic, analeptic, or directed toward the removal of barbiturates from the body. Symptomatic therapy includes maintenance of a patent airway and, when necessary, administration of oxygen through the airway, administration of parenteral fluids (2 to 3 liters every 24 hours), hypertonic solutions in patients with pulmonary edema, ascorbic acid to decrease permeability of blood vessels, antibiotics to prevent secondary infections (mainly pneumonia), frequent changing of the patient's position, and periodic slapping of the thorax to loosen bronchial secretions. The use of concentrated human albumin has been suggested for the prevention or treatment of cerebral edema. Picrotoxin and leptazol have been found to be most effective central analeptics in experimental and clinical acute barbiturate intoxication. Carefully supervised administration avoids convulsions and consequently excessively increased cerebral oxygen needs, as well as depression. Central analeptics act as physiological antagonists in barbiturate intoxication; they do not increase the metabolism or excretion of barbiturates. Massive intravenous infusions of isotonic dextrose or sodium chloride solutions in experimental animals (1) shortened the duration of narcosis from average anesthetic doses of barbital and phenobarbital from one-third to one-half that of controls, and (2) doubled the early elimination of these drugs in the urine. Animals receiving 2 or 3 fatal doses of barbital recovered completely under this treatment.

Taussig-Bing's Disease. A. Mispireta, G. Cornejo, A. Corvacho and others. Rev. peruana cardiol. 5:1-11 (Sept.-Dec.) 1956 (In Spanish) [Lima, Peru].

The case of Taussig-Bing's disease reported on by the authors is the first such to be reported from Peru. The diagnosis was made during the life of the patient and was verified by studies of his blood and by autopsy. The parents and family of the patient were normal. The patient was born apparently normal. The mother observed immediately after birth that the infant had palpitation, some dyspnea, and moderate cyanosis. When the patient was hospitalized at the age of 10 years, his mental age corresponded to that of a child 6 years old. He was in poor general condition, with marked cyanosis, acute dyspnea, and clubbed fingers. Phonocardiographic examination revealed accentuation and reduplication of the second pulmonary sound. Roentgen examination showed a complete transposition of the aorta, levoposition and enlargement of the pulmonary artery, and signs of hyper-

tension in the pulmonary circulation. A diagnosis of Taussig-Bing's disease was made. A definite diagnosis was arrived at on determination of the oxygen content of the blood taken by cardiac catheterization. Oxygenation of the peripheral blood was poor. It was of about the same degree in the right ventricle and in the aorta but was increased in the pulmonary artery. The patient lived a few months after hospitalization and died of cardiac insufficiency. The anatomicopathological diagnosis was Taussig-Bing's disease with bivalve pulmonary artery.

Klebsiella Pneumonia Meningitis: Successful Treatment of Adult Case with Cortisone and Antibacterial Agents. R. L. Sterkel and W. A. Knight. Missouri Med. 54:519-524 (June) 1957 [St. Louis].

There are 2 features of meningitis due to Klebsiella pneumoniae: the relative rarity of the condition and the high mortality rate. Including the patient treated by the authors, only 133 instances of the disease have been reported. No age group is spared. The ratio of males to females is 65.6 to 34.4. Thompson and associates state that K. pneumoniae is the causative agent of meningitis in 0.16%. Before the advent of chemotherapy only 4 patients survived, and 2 of these were left with debilitating sequelae. Since the availability of the various sulfonamides and antibiotics, 33 recoveries are reported (50%); 3 of these patients had residual defects. The authors treated successfully a debilitated 79-year-old man with chronic alcoholism who had bacteremia and meningitis due to K. pneumoniae. The treatment consisted of sulfadiazine, penicillin, and streptomycin in conjunction with cortisone. The indications for the use of cortisone in this disease are proposed. There is a definite need for further evaluation, both clinical and experimental, of the role of adrenal steroids in infections.

Klebsiella Meningitis. A. P. Spivack, G. M. Eisenberg, W. Weiss and H. F. Flippin. Am. J. Med. 22:865-871 (June) 1957 [New York].

The authors report on 10 men and 1 woman between the ages of 35 and 80 years with meningitis due to Klebsiella. The focus of infection seemed to be the middle ear in 3, the lung in 2, and the frontal sinus in 1. In the remaining 5 patients there was evidence of recent trauma to the head in 4 and to the lower urinary tract in 1. Klebsiella could be demonstrated on direct smear of the spinal fluid in 6, and in 1 patient typing was done at the time of the smear on the fresh spinal fluid. The organisms cultured from the spinal fluid were typed in 7 patients; 6 were types 1 or 2 and 1 was type 8. One patient recovered and 10 died. Among the 10 patients who died, the hospital course varied from 1 to 6 days. Four patients received no antimicrobic therapy, 4 were treated with sulfonamides alone, 1 received penicillin and streptomycin, and 1 received the latter 2 drugs in addition to tetracycline and polymyxin. The only patient who recovered was treated with streptomycin, sulfadiazine, and penicillin. This patient was infected with type 8 Klebsiella, and there was a possible causative relationship to trauma of the lower urinary tract.

The 11 cases added to 140 collected from the literature make a total of 151 cases of meningitis caused by Klebsiella. The disease is often fulminating. Most cases have occurred in adults. Meningitis is usually secondary to Klebsiella infection of the respiratory tract, is most commonly due to types 1 and 2, and sometimes follows trauma to the head. Diabetes and debilitating diseases seem to be predisposing factors. Metastatic abscesses are frequent. The available information to date suggests that the drugs of choice are the sulfonamides. The status of the broad-spectrum agents, although promising, is equivocal because of the relatively few cases in which they have been used. In view of the serious nature of this form of meningitis it is recommended that both sulfonamides and broad-spectrum antibiotics be administered at once when a gram-negative encapsulated bacillus is found in the spinal fluid.

Aspiration Biopsy of the Parietal Pleura: Results in 45 Cases. R. F. Donohoe, S. Katz and M. J. Matthews. Am. J. Med. 22:883-893 (June) 1957 [New York].

Aspiration of the parietal pleura was performed in 29 men and 16 women between the ages of 15 and 83 years with pleural effusion in an attempt to establish the causation of this effusion. Adequate diagnostic tissue specimens were obtained in 33 patients (73%) and inadequate tissue specimens in 12 (27%). The histological diagnoses in the 33 patients were granulomatous pleuritis in 14, nonspecific pleuritis in 13, malignancy in 4, eosinophilic pleuritis in 1, and normal pleura in 1. Of 23 patients suspected clinically of having tuberculous pleuritis, this suspicion was confirmed by aspiration biopsy in 12. Of 11 patients with a clinical diagnosis of malignant pleural effusion, pleural biopsy specimens yielded evidence of malignancy in 4. Of 11 patients with effusion of undetermined causation, aspiration biopsy yielded adequate tissue specimens in 6 (54%); 2 specimens were consistent with a granulomatous pleuritis, 1 showed eosinophilic pleuritis, and 3 showed nonspecific pleuritis. There were no significant complications associated with aspiration biopsy of pleura.

Aspiration biopsy, a safe, easy, and accurate diagnostic method, thus was of considerable value in patients suspected clinically of having tuberculosis and was less often so in clinically indeterminate cases. The procedure was least useful in patients with malignancy, in whom pleural involvement may be spotty. The histological diagnosis of nonspecific pleuritis does not eliminate the possibility of either tuberculosis or malignancy as the causative disorder. In patients in whom this diagnosis is made after aspiration biopsy, an open biopsy should be performed if not contra-

V 16
1957

indicated. The prime indication for aspiration pleural biopsy is so-called idiopathic pleurisy with effusion. The method, however, should be used as part of the basic evaluation of any effusion requiring diagnostic aspiration. The only contraindication would be a bleeding diathesis.

Renal Lesions of Scleroderma. G. Carpent. Acta clin. belg. **12:**181-189 (March-April) 1957 (In French) [Brussels].

Scleroderma is no longer considered exclusively a dermatosis. Kidneys can also become involved, and changes in renal function do occur. Most patients with scleroderma show no symptoms of kidney involvement. The renal lesions become worse with the advancing age of the patient and give no clear indication of the extent of impairment of renal function. Autopsy of patients with scleroderma reveals that lesions identical with those accompanying clear renal insufficiency frequently are found in patients with no signs of renal insufficiency. These lesions are edematous hyperplasia of the intima of the interlobular arteries and fibrinoid necrosis of preglomerular arterioles. They are the same as the lesions of malignant nephroangiosclerosis. The author observed 4 patients with renal scleroderma, 3 of whom presented a correlation between the symptoms of malignant hypertension and the findings at autopsy of malignant nephroangiosclerosis. The 4th patient did not have hypertension, although the renal lesions were similar or identical with those of malignant nephroangiosclerosis. The patient, a 55-year-old male, was treated one year for scleroderma. When he entered the hospital his arterial tension was normal (120/80 mm. Hg), the blood urea content 180 mg. per 100 cc., and there was no albuminurea nor pathological cellular elements. The arterial tension never exceeded 150/90 mm. Hg. There were no symptoms of uremia. He died of bronchopneumonia. Here was discordance between the clinical symptoms and the findings of pathological anatomy. The author quotes the observations of other clinicians on patients with renal lesions of malignant nephroangiosclerosis but with no clinical signs of hypertension. Such observations seem to oppose the currently dominant theory that malignant nephroangiosclerosis occurs as a result of hypertension.

Pulmonary Adenomatosis: Six Cases. P. Purriel, D. Tomalino and S. Piovano. Tórax **6:**5-28 (March) 1957 (In Spanish) [Montevideo, Uruguay].

Pulmonary adenomatosis consists of the development of unilateral or bilateral large intrapulmonary nodules of epithelial alveolar cells which merge into a tumor and give rise to metastases. The asymptomatic form is rare. The disease is detected during routine roentgen examination of the chest. The symptomatic form starts, as a rule, with a transient attack of febrile respiratory infection followed by bouts of bronchitis and respiratory symptoms of progressive severity. Bronchorrhea appears only in typical bilateral forms of the disease, depending on the presence of metaplasia of the alveolar mucinous cells. Expectoration consists of a foamy, watery, transparent fluid in daily quantities of 300 to 3,300 cc. In the course of the disease the fluid becomes purulent and later hemorrhagic. This type of bronchorrhea is pathognomonic. Blood spitting is rare. Except for a marked loss of weight, the general health of the patients remains fair for a considerable time. There are no diagnostic tests of specific value. Bronchoscopy is usually negative. Diagnosis is made on the basis of the following factors: (1) chronicity of respiratory symptoms and (2) the presence of a single unilateral or multiple bilateral nodules in the roentgenogram or of gray hepatization in the zone of the lung occupied by the tumor. A definite diagnosis is made on the finding of tumor cells in histological preparations of the sputum and on the results of pulmonary biopsy taken during a thoracotomy. The treatment consists of early lobectomy. This is contraindicated in the presence of symptoms of metastases, bronchopulmonary complications, and aggravations of the respiratory disorders. The duration of the condition varies between 1 year and more than 4 years.

The authors report 6 cases. The patients complained of marked loss of weight. Three patients were men between the ages of 40 and 62. The disease was bilateral and typical. The patients reported late when severe involvement of both lungs and symptoms of metastases contraindicated an operation. The patients died of asphyxia. Autopsy showed a large number of metastases in several viscera and metaplasia of the muciparous alveolar cells. The other 3 patients were women. Their disease was unilateral and asmyptomatic, except in a patient who had hemoptysis. A diagnosis was made by lobectomy during a thoracotomy. Metastases occurred in all patients and were the cause of death.

The Significance of Bronchiectasis Associated with Pulmonary Tuberculosis. J. K. Curtis. Am. J. Med. **22:**894-903 (June) 1957 [New York].

The author reports on 1 8-year-old boy and 7 men between the ages of 26 and 35 years with bronchiectasis associated with tuberculosis. The cases of the first 3 patients illustrate the 3 principal factors which appear to favor the development of bronchiectasis in tuberculous patients. In the boy, enlarged tuberculous hilar nodes compressed a bronchus; partial obstruction with cough, pooling of secretions, and tubercle formation in the more distal portion of the bronchial tree comprised the elements which lead to bronchiectasis. In a 27-year-old man, severe infiltration of the lung with tuberculous disease associated with a cavitary component presented the second and most common cause of tuberculous bronchiectasis. In a 29-year-old man, tuberculous endobronchitis led to destructive changes in the bronchial walls, resulting in

bronchiectasis. The clinical features of tuberculous bronchiectasis are persistent cough and purulent sputum, often tending to subside as the result of antimicrobic therapy. The case of the 4th patient, a 35-year-old man, showed that hemoptysis may be a troublesome occurrence, that protracted bronchitis after an upper respiratory infection is a common sequence, and that at this time the sputum is most apt to be positive for tubercle bacilli. Significant pathological features of tuberculous bronchiectasis were observed in the right upper and middle lobes, which were resected in the 5th patient, a 28-year-old man. Tubercles often lie close to the epithelial surface; this is a dangerous situation when the overlying membrane is ulcerated and ragged. Many bronchiectatic lesions may communicate with cavities or liquefying nodular disease, hence providing a ready source for long-continued positive secretions. The bronchial walls may be greatly thickened by fibrous tissue which hinders the penetration of antimicrobic drugs. Nests of tubercle bacilli lodged in these sheltered areas lie dormant and can survive long periods; when liberated these organisms may cause further disease. The cases of the 3 remaining patients illustrate the importance of bronchiectasis in collapse therapy and surgical resection in patients with pulmonary tuberculosis. Tuberculous bronchiectasis caused failures in pneumothorax treatment and primary thoracoplasties. Careful appraisal of the involved lobe by planigrams and bronchograms is indicated before segmental resection in order to avoid complications associated with the type of tuberculous bronchiectasis which approaches dangerously near the intersegmental plane of dissection. Five patients are reported in whom new cavitary disease with communicating dilated bronchi developed in the segmental plane of a previous segmental resection. Bacteriological relapse was associated in 4, and resection was performed because of hemorrhage in 1.

Thoracic and Pulmonary Lesions Biopsied Under Thoracoscopic Vision. F. Heine. Beitr. Klin. Tuberk. **116:**615-627 (No. 8) 1956-1957 (In German) [Berlin].

Diagnostic pulmonary punctures have been carried out with simple injection cannulas or with the puncture cannulas that are used for liver puncture. Many investigators regard aspiration biopsy of the lung as too dangerous and not sufficiently informative. The author describes a method that enables the examiner to obtain a biopsy specimen from the lung or from the inner wall of the thorax under thoracoscopic control; wide exposure of the thorax is unnecessary. It must be possible, however, to induce a (diagnostic) pneumothorax to an extent that instruments can be introduced with the aid of a trocar from 2 entrance punctures, as when thoracocautery is to be carried out. Illumination is furnished by a thoracoscope, and the biopsy specimen is obtained with a punch. The mouth of the punch is constructed in such a way that one jaw cuts over the other. This cutting action is important for the elastic pulmonary tissue. Furthermore the larger jaw of the punch has a cross bar so that the biopsy specimen will not slip out. The punch turns on its shaft so that the surface of the tissue to be biopsied can be approached in an optimal position. A diathermy sphere on a long shaft is available in order to arrest a possible hemorrhage. After the specimen has been obtained, 2 Monaldi catheters are introduced to remove the pneumothorax with the aid of a pump providing negative pressure.

The author presents 13 patients in whom the method was employed, and in 12 of them a diagnosis was established with the aid of the biopsy specimen. Serious complication, such as air embolism or infection of the pleural cavity, did not occur. When bleeding occurred it could be controlled with the aid of the diathermy sphere. In 10 of the 13 patients the lung had become completely reinflated on the second day after the intervention. The described method of pulmonary biopsy is superior to blind puncture because it is carried out under visual control at the site deemed optimal for diagnostic study; the biopsy specimen is of adequate size; and it is taken from the surface of the lung, so that the effect can be watched.

SURGERY

Arterial Embolectomy and Mitral Commissurotomy. P. Chalnot, R. Benichoux, C. Pernot and J. Dege. Presse méd. **65:**1115-1118 (June 15) 1957 (In French) [Paris].

Arterial emboli in the limbs usually come from a thrombus formed in the left atrium after it has become enlarged as a result of mitral stenosis. The combination of arterial embolism and mitral commissurotomy has therefore become familiar to physicians. Patient with arterial embolism in the limbs may be treated by three methods: (1) the surgical removal of an embolus occurring some hours after mitral commissurotomy, which often has to be carried out as an emergency procedure; (2) mitral commissurotomy, with its necessary corollary, atrial thrombectomy, which may be deliberately decided on in a patient who has lately had an arterial embolectomy but which is not yet accepted as a standard procedure; and (3) embolectomy, if not amputation, which last may be the only possible treatment and which is still unfortunately the one most frequently used. These methods have been used by the authors in treating 49 cases of arterial embolism in the limbs (including the aortic arch) in 42 patients, 35 of whom also had mitral stenosis, either alone or in association with aortic involvement. The results obtained in these 35 patients provide a basis for comparative evaluation of the first 2 procedures as applied to patients with mitral stenosis.

V 16
1957

The second procedure, that is, commissurotomy after an arterial embolectomy, was used in 23 patients, 21 (91%) of whom have survived. Two of the patients have a follow-up of only 6 months and 10 months, respectively, but in all the rest the follow-up ranges from 1 to 3 years. These results contrast sharply with those obtained in 8 patients who, for various reasons, were treated by embolectomy alone, without a subsequent commissurotomy, 6 of whom died within from 2 days to 6 months, 3 from cerebral embolism and 3 from cardiac insufficiency and myocardial failure. One of the remaining 2 has been lost to follow-up and the other, 6 months after operation, presented signs of uncontrollable myocardial insufficiency. Mitral commissurotomy after embolectomy therefore appears to be the treatment of choice in patients with mitral stenosis associated with arterial emboli in the limbs.

Mitral commissurotomy, however, still presents many difficulties when the left atrium is thrombosed. Attempts have been made to overcome these difficulties and to prevent massive peroperative embolism by gentle manipulation and complete curettage of the atrium, but these measures are not entirely satisfactory. The authors have devised a small instrument resembling an umbrella, called the parathrombus, which is designed to prevent the passage of thrombi through the mitral orifice. Blood passes freely through the fabric of the instrument but the thrombi are trapped by it as they are dislodged and can be removed all at once when the instrument is closed and withdrawn from the atrium.

The authors believe that the large amounts of blood often lost during commissurotomy complicated by atrial thrombosis should be replaced so that the blood volume and arterial pressure are restored. This will force small embolic particles toward the most peripheral arteries, where a collateral circulation can easily become established and where obliteration is better tolerated.

Results of Surgery in the Treatment of Pulmonary Tuberculosis. S. J. Viikari, V. Autio and P. Antila. Ann. chir. et gynaec. Fenniae **46**:205-216 (No. 2) 1957 (In English) [Helsinki].

Of 329 patients with pulmonary tuberculosis operated on with the aid of endotracheal anesthesia, extrapleural pneumothorax was performed in 133, thoracoplasty in 117, and pulmonary resection in 79. All the patients had been treated with streptomycin, aminosalicylic acid, and isoniazid for 3 to 6 months before the operation, and the antituberculous drug therapy was continued for from 3 to 6 months postoperatively. The primary mortality in the extrapleural pneumothorax groups was 0.8%, and favorable results were obtained in 93.7% of the patients. The longest follow-up period in this group was 3 years, and only 5 patients were followed up for periods from 3 to 6 months. The extrapleural pneumothorax was terminated about 18 months after its induction, and the lungs had expanded without difficulty. The primary mortality in the thoracoplasty group was 5.1%. Favorable results were obtained in 82% of the patients. The longest follow-up period was 4 years, and 7 patients were followed up for from 3 to 6 months. Of the 79 patients in the resection group, 18 had a pneumonectomy, 6 a lobectomy combined with segmental resection, 27 a lobectomy, and 28 a segmental resection. Two of the 18 patients who had pneumonectomy died, a primary mortality of 2.5%. Bronchial fistula occurred in 2 patients, and empyema appeared in the resected area in 1 patient. The results were favorable in 74 patients (93.7%), but 24 of these had been followed up for only 3 to 6 months.

Of 316 patients in whom follow-up examinations were carried out, 287 (90.8%) obtained favorable results from surgical procedures, 12 (3.8%) had died, and 17 (5.4%) still had Mycobacterium tuberculosis in their sputums. In the assessment of the relative merits and disadvantages of the various surgical procedures, the evaluation of the postoperative function of the lungs is of primary importance besides the recovery rate. Only follow-up examinations of large series of patients can give a reliable answer concerning this problem. In the authors' experience the decrease in pulmonary function resulting from extrapleural pneumothorax and particularly that resulting from segmental resection varies greatly in the individual patient and can be predicted only with difficulty in borderline cases. The decrease in function after a 5-rib thoracoplasty is constantly slight and can be predicted more easily even in borderline cases.

On the Surgical Treatment of Chylothorax Due to Traumatic Lesions of the Thoracic Duct in the Thorax: Experimental Research. L. Giordano. Minerva med. **48**:1515-1519 (April 28) 1957 (In Italian) [Turin, Italy].

Experimental chylothorax was produced in 6 large dogs, 4 of which were subsequently subjected to surgical treatment for the correction of this condition. Symptoms of chylothorax appeared in the 4 dogs 2 weeks after they had been operated on. The other 2 dogs were killed 2 months after the operation. Some clear yellow liquid was found in the pleural cavity of these 2 dogs at autopsy; the lungs and the heart were normal, the lymph nodes were not enlarged, and there was no ascites. The animals with chylothorax were operated on after 15 to 20 days while they were still in condition to survive the operation. The animals were anesthetized and intubated. Two to 3 cc. of a blue-colored vital lymphatic substance was injected in the inter-

digital space of the left hind leg. An incision was then made on or near the scar of the operation through which chylothorax had been created. A large quantity of the colored substance was found after opening of the pleura. The ends of the resected duct were easy to find, thanks to the blue color which they had assumed. A silk ligature was placed on either end of the resected duct, and the thorax was closed. All the animals recovered and were killed 1 to 3 months after the second operation. Lymph was not found at autopsy, the duct was occluded, and there was evidence that collateral lymphatic channels had developed.

Pancreatoduodenectomy for Carcinoma of the Pancreas in an Infant: Report of a Case. W. F. Becker. Ann. Surg. **145**:864-870 (June) 1957 [Philadelphia].

A 15-month-old boy was admitted to a New Orleans hospital in January, 1956, because of massive hematemesis and melena of 6 hours' duration. He was considered normal during the first six months of life; then he began to eat poorly, failed to gain weight, refused to play, and experienced abdominal pain. A hard, nontender, movable mass produced a visible prominence of the upper anterior abdominal wall. Contrast studies of the stomach and duodenum suggested that an enlarged duodenal bulb and a widened duodenal loop were stretched around a mass which lay within the duodenal loop. The roentgenographic diagnosis was "mass arising in the head of the pancreas." Exploratory laparotomy was advised but refused, and the patient was discharged from the hospital. Ten days later he was admitted to another hospital because he had again passed multiple bright red stools. While the child was being prepared for an elective operation, massive hematemesis and melena recurred, and emergency laparotomy was required. The preoperative diagnosis, based largely upon roentgenographic findings, was tumor of the head of the pancreas with extension into the duodenum and massive hemorrhage. At operation the proximal two-thirds of the pancreas was found to be replaced by a hard, fairly well circumscribed, 7-cm. mass. The spleen was twice the normal size, and there were many dilated tortuous veins at its hilum.

Resection of the distal half of the stomach, proximal three-fourths of the pancreas, gallbladder, common bile duct, duodenum, and proximal jejunum was performed. Reestablishment of the gastrointestinal and the biliary-intestinal continuity was effected by a hepaticojejunostomy and a gastrojejunostomy. At the most recent examination, 10 months after the operation, when the boy was 25 months, he appeared normal. The author cites the 6 authenticated cases of primary carcinoma of the pancreas in persons under 13 years of age. This is believed to be the first report of a pancreatoduodenectomy in an infant.

Duodenal Ulcer Treated by Gastro-enterostomy with Vagotomy. F. D. Hindmarsh. Lancet **1**:1113-1115 (June 1) 1957 [London].

The author reviews observations on 197 patients with duodenal ulcer in whom he performed vagotomy and posterior gastrojejunostomy according to a standardized technique. The patients selected for this operation were those in whom chronic ulcer or scarring was demonstrated roentgenologically and confirmed by laparotomy. Acute hemorrhage, in which partial gastrectomy may be life-saving, is a contraindication to gastroenterostomy with vagotomy. To ascertain the results of the surgical treatment, each patient was interviewed at the end of the first year and was later sent circular letters. Of the 197 patients operated on, 1 died after the operation and 2 subsequently from cerebral hemorrhage, and 1 was not traced, leaving 193, all of whom were reviewed in the last 6 months. The author found that the results to date of the standardized procedure of vagotomy combined with a large stoma, drainage, and posterior gastrojejunostomy were encouraging, since they were satisfactory in 189 and unsatisfactory in only 4 of the patients. This review supports the opinion of Oberhelman and Dragstedt in 1955 that, provided vagotomy is complete and drainage adequate, the results will compare favorably with any other operation so far devised to treat duodenal ulcer.

V 16
1957

Pancreatitis, a Diagnostic Clue to Hyperparathyroidism. O. Cope, P. J. Culver, C. G. Mixter Jr. and G. L. Nardi. Ann. Surg. **145**:857-863 (June) 1957 [Philadelphia].

The diagnosis of hyperparathyroidism generally depends upon the presence of a complication of the primary metabolic disorder. In only a rare instance has the disease been identified in the absence of the classic bone disease, urinary tract calcification, or peptic ulceration. The symptoms due to the hypercalcemia itself, such as fatigue, lassitude, and dyspepsia, are so uncharacteristic and so common in the population that dependence upon them to call the diagnosis to the attention of the clinician has proved unrewarding. The authors present the histories of 2 patients with hyperparathyroidism treated at the Massachussetts General Hospital who also had pancreatitis. Acute pancreatitis became evident in the first patient during a phase of known hyperparathyroidism. In the second, who was under treatment for recurrent pancreatitis, the diagnosis was established fortuitously. These experiences, one the converse of the other, suggested that pancreatitis is another complication of hyperparathyroidism. If this is true, all patients with pancreatitis should be screened for hyperparathyroidism. Patients believed to have hyperparathyroidism may develop pancreatitis. The striking features in these 2 patients prompted a

review of the literature. It was found that the association of hyperparathyroidism and pancreatitis, either with or without pancreatic calculi, had been recorded in isolated case reports.

Consideration of a causal relationship between pancreatitis and hyperparathyroidism hinges on which disease plays the primary role. It appears likely that the overactivity of the parathyroids initiates the pancreatitis, although the reverse is possible. The authors visualize the following sequence of events: (1) the development of hyperparathyroidism, (2) the formation of pancreatic calculi, either superimposed on tissue trauma or as a primary precipitation of calcium, and (3) ductal obstruction and pancreatitis. The prompt subsidence of the pancreatitis following parathyroid adenomectomy in 1 of the 2 patients may be explained by the relief of ductal obstruction upon resorption of the calculi following the return of a normal serum calcium level.

Management of Intussusception in Infants and Children. J. F. Langlet and D. P. Chance. A. M. A. Arch. Surg. **75**:35-40 (July) 1957 [Chicago].

Intussusception is seen most frequently in the first 2 years of life and constitutes one of the most common abdominal emergencies. Intussusception may be reduced by air insufflation or enemas, and at the time of operation by manual taxis. Patients with intussusceptions which are irreducible by the above means or are gangrenous may be treated by a variety of surgical means: (1) resection with immediate anastomosis; (2) resection with formation of a double-barreled enterostomy and subsequent closure; (3) suture of the serosa of the invaginated barrel of the intussuscipiens, followed by resection of the gangrenous intussusception through an incision in the ensheathing intestine; (4) lateral anastomosis about the lesion; (5) ileostomy with secondary resection; and (6) various combinations of the above. Of the 19 children admitted with acute intussusception, the etiological factor was found to be a Meckel's diverticulum in 2 and an ileal polyp in 1. In the remainder the intussusception was of the idiopathic variety. The age range of the 14 boys and 5 girls was from 1 month to 2½ years. The parents gave a history of a well baby who suddenly began to have acute, colicky abdominal pain, which recurred in association with vomiting and bloody stools. The patients appeared some time after onset to be pale, listless, dehydrated, and acutely ill, with a rapid pulse. The abdomen was frequently distended, palpation revealing a sausage-like mass. Barium enemas, attempted in 16 cases, were successful in the reduction of the intussusception in 6 of the 19 cases in this series. No reduction or incomplete reduction was effected in 9 cases, the barium enema studies being within normal limits in 1 patient with an ileoileal intussusception. Of the 13 patients requiring surgical management, spontaneous reduction was found to have taken place in 2 and reduction by manual taxis was completed in 7; in 4 cases the intussusception was irreducible or gangrenous, requiring resection. A better understanding of the management of body fluids and electrolytes, recently developed antibiotics, and improved pediatric and anesthetic care have greatly reduced the mortality rate in the past decade. Packard reported a 50% mortality rate in 4 cases in the period 1934 to 1944 and no mortality in the 8 cases treated in the period 1944 to 1954. Dennis reports 8 consecutive successful resections and Thatcher reports a 6% mortality in 15 cases requiring resection from 1947 to 1953 in contrast to a 55% mortality in 20 cases prior to that time.

Spine Fusion in Young Children: A Long-Term End-Result-Study with Particular Reference to Growth Effects. H. Hallock, K. C. Francis and J. B. Jones. J. Bone & Joint Surg. **39A**:481-491 (June) 1957 [Boston].

A clinical and roentgenographic study was made of the effects of spine fusion on the growth of the fused vertebrae in 15 patients, 5 male and 10 female, who had been subjected in early childhood to a Hibbs type of spinal fusion for tuberculosis and who were followed into adolescence and adult life for from 12 to 31 years. Fusion was successful in all patients, and the lesions of the spine healed. Since in all of these patients at least 2 normal vertebrae had been included in the fusion above and below the diseased area, a unique opportunity was offered to study the effects of arthrodesis on growth in fused normal vertebrae as well as in diseased vertebrae.

The growth changes observed were narrowing of the intervertebral disk spaces in the fusion area with occasional partial obliteration, a trapezoid development of the end vertebrae, and underdevelopment of the fused vertebral bodies in both the sagittal and frontal planes. Whenever possible measurements were made directly on lateral roentgenograms of the entire fused area, 2 normal-appearing vertebrae included in the fusion above and below the diseased area, and 2 or 3 normal contiguous vertebrae above and below the fusion. The measurements made on early postoperative roentgenograms were compared with those on late roentgenograms showing final results. The end-results were compared with the original measurements in terms of percentage increase over 100, in order to eliminate the error of unknown early target-to-tube distance and an increase in the target-to-spine distance caused by growth in thickness of the patient. It was found that considerable variation of growth occurred even in persons of similar age at operation. On an average, the entire fusion area grew anteriorly 37% less and posteriorly 45%

less than normal vertebrae. The fused normal vertebrae grew 23% less anteriorly and 36% less in the posterior elements than adjacent normal unfused vertebrae.

Primary Carcinoma of the Appendix: An Incidental Finding During Laparotomy. J. Rabinovitch, P. Rabinovitch, P. Rosenblatt and H. Zisk. A. M. A. Arch. Surg. **75**:122-127 (July) 1957 [Chicago].

The finding of a primary carcinoma during routine laparotomy is a rare occurrence. The diagnosis of primary carcinoma of the appendix is difficult because there are no pathognomonic signs or symptoms. The clinical signs may be absent despite large tumor growths. Abdominal symptoms may be due to a superimposed acute inflammatory appendix as a result of constriction of the lumen by the invading neoplasm or by the perforation of the viscus. In none of the 4 patients reported was the diagnosis of primary carcinoma made or even suspected preoperatively, nor was a correct interpretation of the changes noted in the appendix made by the operator when viewing the lesion at the operating table. Actual diagnosis was made only after histological examination of the resected specimen. Carcinoma of the appendix as a primary lesion tends to localize within the appendix and does not tend to metastasize. Since these tumors are slow-growing and tend to localize, many surgeons advocate conservative removal of the appendix to include a generous margin of the adjunct cecum. The majority are of the opinion that radical surgery (right hemicolectomy) offers a better chance of permanent surgical arrest. Roentgen therapy is of little value. Of the 4 patients reported, 3 are alive and well 8 years after radical extirpation of the lesion and the 4th is alive and well 12 years after simple removal of the appendix.

The Spread of Soft-Tissue Sarcomata of the Extremities Along Peripheral-Nerve Trunks. J. R. Barber, M. B. Coventry and J. R. McDonald. J. Bone & Joint Surg. **39A**:534-540 (June) 1957 [Boston].

The pathological relationship between soft tissue sarcomas of the extremities and the nervous system was studied in 98 patients, 62 male and 36 female, between the ages of 3 and 74 years. Thirty-seven of the sarcomas were located in the upper extremities and 61 in the lower extremities, and the involved extremities had been amputated. In 38 of the 98 amputated extremities the following evidence of pathological relationship between sarcomas and peripheral nerves was found: Adherence of the nerve to the tumor in 13 extremities, displacement of the nerve by the tumor in 4 extremities, passage of the nerve through the tumor in 11 extremities, and invasion of the nerve by the tumor in 10. Microscopic study revealed that the tumor had infiltrated the epineurium in 7 extremities and that it had infiltrated the epineurium and spread along the nerve in the epineural connective tissue for varying distances in 4 extremities. Thus in 11 of 98 extremities the tumor had invaded peripheral nerves. Metastasis to the regional lymph nodes had occurred in 12 of the extremities.

Fifty of the 98 patients had complained of neurological symptoms, such as pain or numbness, but in only 23 patients was it possible to explain these complaints on the basis of macroscopic and microscopic findings. The results of the findings in the patients suggest that invasion of peripheral nerves by soft tissue sarcomas of the extremities is fairly common. Invasion of peripheral nerves by soft tissue sarcomas seems to be confined mainly to the epineural connective tissue; the nerve bundles and the perineurium apparently resist invasion. Soft tissue sarcomas that invade the epineural connective tissue of peripheral nerves may spread along this tissue. In patients with pathological involvement of the peripheral nerve by a soft tissue sarcoma, there may or may not be associated symptoms and signs.

Bronchial Adenoma: A Study of 60 Patients with Resection. R. H. Overholt, J. A. Bougas and D. P. Morse. Am. Rev. Tuberc. **75**:865-884 (June) 1957 [New York].

The authors report on 27 male and 33 female patients between the ages of 13 and 71 years with bronchial adenoma who were operated on. Of the 60 patients, 31 underwent pneumonectomy, 15 lobectomy, 10 double lobectomy, 1 lingulectomy, 1 bronchotomy and plastic repair, 1 simple bronchotomy, and 1 local excision by wedge resection. Four patients had multicentric lesions. Three patients died, 24, 24, and 48 hours, respectively, after the operation. Five patients died of metastases, 1, 2, 2, 3, and 4 years, respectively, after the operation. Lymph node or distant metastases were found at the time of the operation in an additional 4 patients; thus the metastatic potential was 15%. Four patients died of intercurrent disease. Forty-eight patients are living and well; less than 5 years have passed since the operation in 15, more than 5 and less than 10 years in 17, from 11 to 20 years in 13, and more than 20 years in 2. Of the first 20 consecutive patients operated on more than 10 years ago, there were no operative deaths and only 1 died later of the tumor. The remaining 19 (95%) appear to be cured.

A definite clinical pattern is followed with more regularity in bronchial adenoma than in other forms of primary lung tumor. A dry cough, unilateral wheeze, and recurrent, so-called "clean" hemoptysis are most suggestive. The cough becomes productive, and there may be chills and fever (in 28 patients), pleuritic pain (in 12 patients), dyspnea (in 11 pa-

V 16
1957

tients), and occasionally weight loss (in 9 patients). The average duration of symptoms was well over 3 years. In some patients the symptoms existed for as long as 45, 20, 18, 17, 15, 12, and 10 years. All of these patients with long histories were apparently cured by resection. However, 2 patients with a 6-year and 7-year history, respectively, died of generalized metastases 2 and 4 years after surgery. Thus the usual prolonged course bears no relationship to curability. Bronchoscopic resection is not a reliable method of treatment. Cure requires transthoracic excision of the tumor and removal of lymph nodes. The extent of lung resected depends largely on the extent of irreversible changes in the pulmonary tissue. Early intervention will conserve lung and, in some patients, will permit local excision by bronchotomy. Treated surgically, bronchial adenoma has the best prognosis of any lung tumors with a malignant potential.

Malignancy of Solitary Adenomas. K. Keminger. Klin. Med. **12:**233-240 (June) 1957 (In German) [Vienna].

Of 15,700 thyroidectomies performed at the surgical department of the Empress Elizabeth Hospital, in Vienna, between 1945 and 1955, 1,290 were done for solitary adenoma and 9,678 for multiple adenoma. Of the 1,290 solitary adenomas, 33 (2.55%) were malignant or suspected to be malignant, while of the 9,678 multiple adenomas 122 (1.26%) were malignant or suspected to be malignant. Solitary adenomas thus are twice as frequently malignant as multiple adenomas. Of the 33 malignant solitary adenomas, 7 occurred in patients between the ages of 20 and 30 years and 9 in patients between the ages of 40 and 50 years; patients in the younger age groups, therefore, have been predominantly affected, while an increase in the incidence of all the malignant goiters occurs only with advanced age (age of carcinoma). Of the 33 solitary adenomas, 9 were papillary adenocarcinomas, 5 malignant adenomas, 4 Langhans' goiters, 1 Hürthle-cell tumor, and 14 were suspected to be malignant. The large number of tumors suspected to be malignant shows how difficult the decision is whether or not the tumor is to be considered malignant. The number of borderline cases is particularly great in the thyroid in which the microscopic picture is highly polymorphous and the boundary between a marked tendency to proliferation and atypical, already malignant growth is indistinct. The development of solitary adenoma seems to have an origin which differs from that of multiple adenoma; while multiple adenoma probably represents a form of hyperplasia, the development of the solitary adenoma seems to correspond more to that of a tumor. The high incidence of malignant adenomas in patients with single nodules makes increased caution advisable but does not justify surgical treatment of every goiter in young patients in whom a nodule may be palpated, since solitary adenomas the presence of which is suspected from palpation findings are rarely solitary in reality.

Ligation of the Internal Mammary Arteries in the Treatment of Patients with Angina Pectoris. F. De Matteis, C. Barocelli and G. Barbano. Minerva med. **48:**1920-1926 (May 30) 1957 (In Italian) [Turin, Italy].

Twelve patients, 45 to 65 years of age, with angina pectoris were subjected to ligation of the 2 internal mammary arteries in the second intercostal space. Six patients presented myocardiosclerosis with electrocardiographic signs of ischemic damage, a well-compensated general circulation, and anginal syndrome only on exertion. The remaining 6 patients presented a postinfarction anginal syndrome which they had developed at least 3 months after the infarction. Previous medical treatment had no beneficial effect in all 12 patients. The operation produced immediately satisfactory results in 8 of the 12 patients; stenocardial disturbances disappeared completely or in part. The results were very good in 4 patients and good in the other 4. Electrocardiographic improvement occurred in only 2 of the 8 patients. This improvement was already marked in one patient 2 hours after the operation; normal values were observed 48 hours after the operation. The same patient had a relapse 3 months after the operation; stenocardial episodes and mild ischemia were observed. Observations made one year after the operation showed that the subjective condition of the 8 patients had remained good. Some improvement was noticed in one of the 4 patients in whom the operation had had no immediate beneficial effect. One patient died 8 days after the operation because of bronchopulmonary involvement. Changes in the size of the heart were not observed.

Surgical Treatment by Pulmonary Exeresis in Tuberculous Children. C. Wapler, A. Libert and B. Voisin. Presse méd. **65:**1143-1146 (June 19) 1957 (In French) [Paris].

Resection is suggested as a method complementary to the administration of antibiotics, in cases where antibiotics alone fail to accomplish a cure of tuberculous lesions. The authors performed pulmonary resection on 26 children, aged 8 to 16, of whom 16 were girls and 10 boys. The children came from poor homes. Their medical history was unknown, and they had received no antibiotics before admission to the hospital. The course of the disease was advanced at the time of the operation. The results of operation were satisfactory; 23 children made a good recovery and 2 relapsed, and antibiotic treatment was resumed for them. The indication for resection in a child is advanced stage and numerous

lesions in puberty. Resection is more clearly indicated in children than in adults. Postoperative spread of lesions was observed in 2 patients. A systematic description of the lesions can be obtained by comparing the anatomic and the pathological features with the clinical and radiologic findings. Only such a description will determine the limits of indication for surgical therapy.

Gastric Glomus Tumor: Report of Case and Review of Literature. E. Shocket, H. C. Moeller, E. L. Cheatle and others. Gastroenterology **32:**1145-1151 (June) 1957 [Baltimore].

A 66-year-old patient with myelofibrosis and compensatory hematopoiesis of the liver and, presumably, of the spleen, was found on roentgenogram to have a persistent defect in the antrum of the stomach. Laparotomy with local excision established the gastric lesion to be a glomus tumor. The patient was followed for 9 months after the operation. His vigor had returned, although he was still troubled by easy satiety. Roentgenograms of the stomach revealed some deformity of the antrum at the operative site, which was significantly smaller than it had been 5 months after the operation, and was compatible with postoperative scarring. This patient was the 8th with gastric glomus tumor reported on in the literature. The typical epithelioid appearance of these tumors allows them to be confused with carcinoids. The occurrence of glomus tumors in regions of the body where normally there are no glomera is explained. All but one of the patients with gastric glomus tumor were males; the patients were over 40 years of age. Gastrointestinal bleeding was present in half of the patients. A definite ulceration was demonstrated in the mucosa overlying the tumor. The tumor itself was usually somewhat encapsulated and found in the submucosa or muscularis. None of these tumors was considered malignant. Local excision would seem adequate treatment of a known glomus tumor.

Cardiac Monitor for Detection and Differentiation of Cardiac Standstill, Ventricular Fibrillation, or Peripheral Vascular Collapse During Surgery. R. Simpson, B. Abrams and A. S. Gordon. Surg. Gynec. & Obst. **105:**110-113 (July) 1957 [Chicago].

A relatively low incidence of permanent survival after cardiac arrest (cardiac standstill or ventricular fibrillation) results from failure to recognize the condition immediately and resultant delay in starting effective therapy. Cardiac resuscitation is usually successful if there has been proper diagnosis and institution of adequate therapy within 4 minutes from time of onset. The most common cause of poor outcome is failure to detect the condition, as the bulk of the reported series are those of large general hospitals with staffs well indoctrinated in the immediate treatment of cardiac standstill, ventricular fibrillation, and peripheral vascular collapse. The practical cardiac monitor used here is a small, simple, portable, inexpensive, explosion-proof, transistorized, battery-powered unit which provides a continuous instantaneous visual pattern of the electrical activity of the heart. It has proved reliable and efficient in reflecting tachycardia, bradycardia, and extrasystoles and has accurately detected cases of cardiac standstill, ventricular fibrillation, and peripheral vascular collapse. Its use in the emergency or admitting rooms makes possible an immediate assessment of critically ill patients. Since the normal heartbeat causes regular pulsations of the galvanometer needle, the observer is able to discern the onset of ventricular fibrillation by the small, irregular, and highly erratic oscillations lacking regularity of rate and amplitude and of cardiac standstill where the movements of the galvanometer cease. The amplitude of the oscillations is not visibly affected by the profound hypotension of the pulseless patient in peripheral vascular collapse; thus, the differentiation of the latter condition from that of cardiac standstill and ventricular fibrillation is possible without resort to thoracotomy.

An Evaluation of Portacaval Shunts for Portal Hypertension. G. A. Hallenbeck and E. Shocket. Surg. Gynec. & Obst. **105:**49-60 (July) 1957 [Chicago].

Portal hypertension occurs in man when the portal system blood flow is impeded either within the liver by cirrhosis or other diseases or outside the liver by diseases of the portal vein and its tributaries. Portal decompression by some form of portacaval anastomosis seemed a natural solution to the problem of bleeding from esophageal varices. Operative technique soon resolved itself about the anastomoses between the portal vein and vena cava (end-to-end and side-to-side) and the splenic and left renal veins (end-to-side). Of the 47 patients, with an age range of 5 to 73 years, 43 had cirrhosis and 44 had experienced hematemesis. Acceptable evidence for a diagnosis of esophageal varices includes positive evidence in the esophagogram or on esophagoscopic examination with a history of bleeding eliminated by esophageal tamponade. Of the 47 operations 29 were direct portacaval shunts (1 side-to-side; 28 end-to-side) and 18 were splenorenal shunts. The hospital mortality of the portacaval shunt was 20.7% and of the splenorenal shunt (accompanied by splenectomy) was 5.6%, with a collective mortality of 14.9%. The hospital mortality rate was a function of and reflected the degree of liver function impairment, lending strength to the belief that patient selection does greatly influence the hospital mortality rate. Although postoperative data are scanty and somewhat inconclusive, portacaval shunts are believed to be more effective in

V 16
1957

relieving portal pressure than the splenorenal shunts. The difference between portacaval and splenorenal subsequent postoperative bleeding propensity is negligible. The 47 patients experienced a total of 75 hemorrhages during the 12-month preoperative period, while the survivors (40) experienced only 4 hemorrhages during a similar postoperative period. The effect of portacaval shunts on hepatic function is not readily apparent as a transient depression of hepatic function ensues postoperatively. Very few of the patients showed improved hepatic function and a like number showed correspondingly reduced function, the greater portion of the patients remaining unchanged. Neurological symptoms did not appear in any of the 17 patients after splenorenal anastomoses. Varying degrees of neurological symptoms did develop subsequently in 6 of the 23 surviving portacaval shunt patients. A widespread thrombus in the portal system was the cause of the one death in the splenorenal series. More high-risk patients have been subjected to portacaval shunts than to splenorenal shunts. Portal decompression is planned for those who have bled from varices and whose hepatic function has been adjudged adequate to withstand operation.

Postoperative Collapse Due to Adrenal Insufficiency Following Cortisone Therapy. G. Slaney and B. N. Brooke. Lancet **1**:1167-1170 (June 8) 1957 [London].

Patients who have received cortisone are liable to collapse when later submitted to the stress of an operation. There is evidence that this state of shock is the outcome of adrenal insufficiency due to atrophic changes within the adrenal cortex induced by corticosteroid therapy. Death in 3 patients could be explained only on these grounds. Shock was successfully treated in 4 other patients by the further administration of cortisone, though one eventually died. Cortisone should be administered prophylactically to any patient undergoing operation who has had corticosteroid therapy within a year, and possibly 2 years, of the operation; cortisone cover should include the operation period and should be withdrawn during convalescence. The suggested dosage for prophylactic treatment is presented in a table. The scheme is based on the fact that cortisone administered orally is most effective from 4 to 8 hours later; intramuscularly, 8 to 12 hours later; and intravenously (as hydrocortisone), almost immediately but only for a short time.

Since the authors have given corticosteroid cover immediately before, during, and after operation, postoperative shock has been conspicuous by its absence in 8 patients severely ill with ulcerative colitis after previous corticoid therapy: 10 operations were performed with uninterrupted recoveries. One of the patients undergoing primary colectomy is of particular interest because, though his blood pressure did not fall after this major operation, it fell after a minor operation undertaken subsequently when cortisone cover had been withdrawn. The complications usually associated with cortisone therapy must be expected while prophylactic cover is being maintained, especially a tendency to infection and septicemia. Such infections require larger doses of antibiotics than usual for their control. In any patient for whom corticosteroid therapy is contemplated, careful consideration should be given to the likelihood of operation being needed. Operative risks are increased by antecedent administration of cortisone.

Functioning and Nonfunctioning Adrenal Cortical Tumors. P. Heinbecker, L. W. O'Neal and L. V. Ackerman. Surg. Gynec. & Obst. **105**:21-33 (July) 1957 [Chicago].

There is no constant clinical syndrome associated with adrenal cortical tumor, as the symptomatology is dependent on the type of cortical hormones elaborated by the tumor. Thus, adrenal tumors are less apt to produce a "pure" syndrome than the adrenal hyperplasias. The chief symptoms and findings in Cushing's syndrome are central obesity with acral wasting, profound depression, florid round face, bruising, purplish striae, hypertension, amenorrhea, susceptibility to infection, poor healing of wounds, and back pain, occasionally with collapse of vertebrae. Some 80% of the adrenal tumors producing Cushing's syndrome occur in females, while a larger percentage (76%) of these same cases occur in females over the age of 12. Virilization may result in advanced bone age in children, whereas Cushing's syndrome may be associated with retarded bone age. The diagnosis of virilizing syndromes is confirmed not by abnormalities in blood cell count, carbohydrate metabolism, or plasma electrolytes but by the increased amounts of 17-ketosteroids in the urine due to either tumor or hyperplasia of the adrenal cortex. Allen's test for dehydroisoandrosterone is useful in differentiating tumor from hyperplasia, since patients excreting exceptionally large amounts of dehydroisoandrosterone were all found to have tumors. Polycythemia, leukocytosis with a lymphopenia, and a decrease in circulating eosinophils; a diabetic-type glucose tolerance curve; increased capillary fragility; osteoporosis; and hypokalemic hypochloremic alkalosis have all been found among patients exhibiting Cushing's syndrome. The urinary excretion of 17-ketosteroids and 17-hydroxycorticosteroids are more apt to be higher in Cushing's syndrome due to malignant tumor than in Cushing's syndrome due to adrenal hyperplasia. Further differentiation is possible (1 case observed) in that cortisone will suppress the urinary excretion of 17-ketosteroids in Cushing's syndrome due to adrenal hyperplasia but will not affect that excretion of 17-ketosteroids

due to tumor. Pathologically, tumors with fairly regular nuclei but with capsular invasion and invasion of veins are associated with a malignant course. Accessory findings helpful in differentiating benign and malignant tumors are necrosis, calcification, pleomorphism, and nuclear atypia.

The mortality rate following removal of a cortical tumor in Cushing's syndrome was exorbitantly high (56.3%) when substitution therapy was lacking or was inadequate. This rate was reduced to 20.6% due to better replacement therapy. Atrophy of the remaining normal adrenal cortex resulted in postoperative cortical insufficiency with a high mortality rate. Excision of adrenal tumors in the androgenital syndrome is accomplished at a much lower mortality rate than above due to lower incidence of atrophy in the contralateral adrenal cortex. Long-term results following removal of benign tumors are favorable, while the results with malignant tumors are poor, only 1 of 10 patients being alive and well at a 10-month follow-up.

Nitrogen Mustards in Preoperative Treatment of Cancer of Digestive Tract. M. Maur and S. Zampini. Semana méd. **23**:759-765 (May 30) 1957 (In Spanish) [Buenos Aires].

The authors used derivatives of dichlorodiethyl sulfide (Yperite) for the alleviation of symptoms of cancer of the digestive tract. Nitrogen mustard was used in the preoperative treatment of 4 patients with advanced cancer of the digestive tract. The first patient treated had a tumor of the stomach about 2 cm. below the cardia, of 1½ years' duration, with increasing dysphagia for 7 months. Dysphagia disappeared after the 7th injection of nitrogen mustard. The second patient presented symptoms of extensive carcinomatous infiltration of the lesser and greater curvatures of the stomach, poor general condition, and severe pain for the past 2 years. Nitrogen mustard treatment brought about disappearance of pain and of dysphagia. The third patient had a palpable tumor in the right iliac fossa, 13 by 6 cm. in diameter; the radiologic examination showed a tumor of the cecum and of the ascending colon. Treatment with nitrogen mustard brought about diminution of the size of tumor by 50% and improvement in the general condition. Nitrogen mustard therapy made possible an easy excision of the tumor in these 3 patients. The 4th patient had a tumor in the pelvis, a small hepatic metastasis, and carcinomatosis involving the posterior and lateral peritoneal surfaces. The first operation brought about only palliative results. The administration of nitrogen mustard permitted a second operation 6 months after the first. The result was satisfactory. The authors believe that nitrogen mustard can be used in the preoperative treatment of all types of cancer considered inoperable on the basis of clinical examination.

Diagnosis and Treatment of Diastematomyelia. G. Perret. Surg. Gynec. & Obst. **105**:69-82 (July) 1957 [Chicago].

In the past 2 years 5 verified cases of diastematomyelia were diagnosed and treated at the University Hospital at the University of Iowa. All of these patients presented obvious cutaneous defects, underlying spinal canal defects, and associated neurological disorders. This condition is more frequent in females than males and in infancy and childhood. A bony, cartilaginous, or fibrous septum is a characteristic feature of the malformation. Other symptoms, depending on the extent and location of the malformation, include weakness, atrophy, maldevelopment and malformation, associated disturbances in gait and stance, disturbances in sensation, reflex changes, impaired function of the bladder and rectal sphincter, and secondary infections, ulcerations, and trophic changes of anesthetic areas. In the 5 cases studied a diagnosis of congenital spinal anomaly was made clinically. Further diagnosis of diastematomyelia is contingent upon roentgenologic and myelographic examinations and surgical verification. Cutaneous defects were present in all of the cases; 4 patients had symptoms of hypertrichosis, characterized by long, soft, silky hair lying in the midline of the back over the region of the underlying bony anomaly. In the lumbar and lower thoracic regions the "upward migration" of the cord is impeded by the presence of a bony, fibrous, or cartilaginous malformation of the spine producing considerable tension on the spinal cord proper and ultimately neurological disturbances. Operative technique (via laminectomy) provides for the removal of the cord-transfixing elements and mobilization of the spinal cord and is considered prophylactic rather than curative. Patients so treated have either improved clinically or failed to show progression in their neurological disturbances.

Closing of Atrial Septal Defects with the Aid of Hypothermia. D. E. Thomas. U. S. Armed Forces M. J. **8**:784-788 (June) 1957 [Washington, D. C.].

Atrial septal defects are sometimes cribriform, that is, there may be a large defect and several small ones. Operation under direct vision is therefore preferable to the closed methods, because it has the following advantages: (1) more complete closure of the defect, (2) detection and correction of associated anomalies such as pulmonary venous drainage into the right atrium, and (3) protection of the coronary sinus from partial or complete occlusion by a suture. The author reviews observations on 18 patients in whom operations were performed under the guidance of Swan and his group, who have had great experience in interatrial surgery under direct vision during hypothermia. Seventeen of the 18 operations were performed

V 1
195

with the aid of hypothermia and 1 with the bubble oxygenator. Ten patients were less than 10 years of age, 4 were 20 to 30, and the remaining 4 were 30 to 38 years of age. In general, there was a history of retarded growth, dyspnea on exertion without cyanosis, and frequent respiratory infections. Lack of cyanosis is to be expected, because the shunt is from let to right. The severity of symptoms varied. The patients were generally underdeveloped and underweight. There was increased vascularity of the lung fields, enlargement of right auricle and ventricle, posterior displacement of the esophagus by the right auricle, and increased pulsation of the pulmonary artery. Electrocardiograms often showed incomplete right bundle-branch block and evidence of right ventricular hypertrophy. Cardiac catheterization revealed evidence of a left-to-right shunt at the atrial level with increased oxygenation of the blood. Mild to marked right ventricular and pulmonary artery hypertension was frequent.

There were 2 deaths in this group of 18 patients. Neither of these deaths was considered to be the result of hypothermia. One was due to bronchopneumonia on the third postoperative day. The other was believed to be due to ventricular fibrillation. Follow-up evaluation was possible in 13 patients. Eleven of these showed weight gain, increased strength and vigor, and unlimited activity. One patient has residual symptoms from peroneal palsy and one, given a preoperative diagnosis of psychogenic musculoskeletal disorder without true cardiovascular symptoms, reports no postoperative improvement. Air embolism has not been a problem, because the left side of the heart was flooded with isotonic sodium chloride solution through the defect just prior to the tying of the last suture. The right auricle and ventricle are similarly flooded prior to the clamping off of the incision in the auricular wall. The coronary arteries are protected from air embolism by placement of the clamp that occludes the aorta and pulmonary artery low enough to occlude the coronary ostia. Ventricular fibrillation has been a problem, but not an insurmountable one.

Diagnosis and Surgical Treatment of Mitral Stenosis. F. G. Uglov. Khirurgiya **33**:55-60 (No. 5) 1957 (In Russian) [Moscow].

In the surgical treatment of mitral stenosis the differentiation between stenosis and insufficiency plays an important part. Among the 100 patients with a clinical picture of mitral stenosis operated on, there were 9 exhibiting mitral insufficiency, the atrioventricular orifice admitting 1½ to 2 fingers. There was 1 fatality in this group of 9; the remaining 8 did well and were much improved. Analysis of the 100 patients studied clinically and operated on suggests the following factors as favoring the diagnosis of stenosis: pulmonary stasis, insignificant or no enlargement of the left ventricle, and absence of prominence of the aortic arch as compared with that of the pulmonary artery in the roentgenogram. Electrocardiographic data pointing to hypertrophy of the ventricles are of diagnostic importance. Data suggesting hypertrophy of the left ventricle speak for the predominance of insufficiency. Pronounced dyspnea on mild exertion and pain in the cardiac area in the absence of ascites or markedly enlarged liver speak for stenosis, while patients with aortic insufficiency have less dyspnea on exertion in the presence of liver enlargement and even of ascites. The above signs and symptoms have only relative value in the differential diagnosis between stenosis and insufficiency. Operative intervention is indicated in the doubtful cases as well. Diagnosis of mitral stenosis constitutes an absolute indication for surgical intervention, provided the patient is not in the stage of severe and irreversible decompensation. Among the 100 patients operated on there were 11 fatalities. Commissurotomy improves the general condition of the patients to a greater extent. The operation is equally effective in the presence of auricular flutter and moderate decompensation.

Coronary Endarterectomy: Curettement of Coronary Arteries in Dogs. A. M. May. Am. J. Surg. **93**:969-673 (June) 1957 [New York].

Instrumental exploration of the coronary arterial tree, both through a transaortic approach and by an approach through the terminal portion of the coronary arteries, was successfully accomplished in 23 adult dogs of various size. Injuries to the intima of the coronary artery may be produced without causing death or disability of the animals. Previous to animal experimentation, curette procedures were carried out on 18 human cadavers; it was found feasible to remove the atheromatous tissue from the first portion of the coronary arteries. Techniques and approaches are described. The retrograde method was found the most practical and quickest, involving minimal mortality.

Experiences with Extracorporeal Circulation in Open Cardiac Surgery. G. H. Pratt. Am. J. Surg. **93**:960-969 (June) 1957 [New York].

Lesions of the heart were treated surgically in 3 ways. Closed-heart surgery does not require direct vision of the inside of the heart. The open-heart technique with hypothermia imposes a strict time limit. The cardiopulmonary bypass with a pump oxygenator is the third method of heart surgery. The author emphasizes the difficulties and the time and effort one must expend to master the open-heart surgery technique. The technical points that have to be surmounted in performing successfully heart-lung work, requiring much experience, are detailed. A well-trained team, experienced in all types of major and thoracic surgery, with the cooperation of the departments of pathology and hematology, worked with a partial oxygenation pump and performed 2 and 3 operations a week for 5 months before a dog survived the surgery. Success

had to be achieved on dogs before operation on human beings were attempted, since these animals are difficult to keep alive after open-heart surgery. Lesions of the heart, previously not corrected or only partly helped, such as ventricular septal defects, atrioventricularis communis, isolated infundibular pulmonary stenosis, and the tetralogy and pentology of Fallot, have been operated on successfully. No clinic should undertake open-heart surgery until routine success on experimental animals can be demonstrated.

The Surgical Treatment of Chronic Pancreatitis. R. F. Bowers. J. Kentucky M. A. **55**:511-516 (June) 1957 [Louisville].

A plan of therapy for chronic pancreatitis is presented. Biliary surgery, choledochojejunostomy en Roux Y, and cystenterostomy or cystgastrostomy gave excellent results in selected patients when performed in the early stages of the disease. Control of the attacks of pancreatitis was achieved in half of the patients by biliary tract surgery alone. Choledochojejunostomy en Roux Y was performed when attacks recurred and no disease of the biliary tract could be demonstrated. Of 19 patients thus operated on, only 1 was designated as a failure; he developed a pseudocyst. No satisfactory procedure for control of the disease was found when the "burning out" or "burned out" stage of the disease was reached. A few patients might be helped by caudal pancreaticojejunostomy. The only relief in this stage was obtained by pancreaticoduodenectomy, but the disadvantage of this procedure is the formation of peptic ulcers, caused by the loss of the alkaline pancreatic secretions to the duodenum.

Rheumatoid Arthritis Presenting as Tenosynovitis. J. H. Jacobs, E. V. Hess and I. P. Beswick. J. Bone & Joint Surg. **39B**:288-292 (May) 1957 [London].

Tenosynovitis with effusion has often been considered of tuberculous origin, but many cases have been reported in which conclusive evidence of tuberculosis was not found. While it is well known that tendons and tendon sheaths may be involved in the course of rheumatoid arthritis, it is not so widely recognized that early rheumatoid arthritis may present as isolated attacks of tenosynovitis. The authors present the histories of 3 women, aged 41, 42, and 68 years, respectively, in whom tenosynovitis of the hands and wrists was the primary manifestation of rheumatoid arthritis. Involvement of the joints first became apparent 18 months, 14 months, and 4 months after the preceding attacks of tenosynovitis. One of these patients had 2 attacks of tenosynovitis, one involving the right and other the left hand, before the development of arthritis. It is often impossible to distinguish, on clinical grounds, between tuberculous tenosynovitis and isolated rheumatoid tenosynovitis. The appearance of the tendons and sheaths at surgical exploration may still leave the diagnosis in doubt, and it is not until the tendon sheaths have been examined histologically that the true nature of the condition becomes apparent.

The biopsies taken from the 3 patients showed hyperemia and edema of the tendon sheaths, proliferation of synovial lining cells with exudation of fibrin upon synovial surfaces, and diffuse infiltration of the tissues with lymphocytes and plasma cells, together with the formation of circumscribed lymphoid nodules. While no single one of the changes seen in the tendon sheaths in these patients can be considered specific of rheumatoid arthritis, collectively they provide strong presumptive evidence of the diagnosis.

The Secretory and Clinical Aspects of Achlorhydria and Gastric Atrophy as Precursors of Gastric Cancer. C. R. Hitchcock, L. D. MacLean and W. A. Sullivan. J. Nat. Cancer Inst. **18**:795-809 (June) 1957 [Washington, D. C.].

At the University of Minnesota Hospitals, screening for achlorhydria and hypochlorhydria has proved an effective means of diagnosing a reasonable number of gastric cancers in the asymptomatic phase of the disease. During a 10½-year period, over 12,000 men and women have undergone a screening test to detect those persons likely to develop gastric cancer. The portion of the total population that must be examined periodically because of increased likelihood to develop gastric cancer has been reduced to 6½%. The problem of population screening becomes economically feasible through this method, and adequate protection for the population at large appears to result from this approach. No case of gastric cancer in the University of Minnesota Cancer Detection Research Center would have been undetected if all other screening techniques except examination for achlorhydria and hypochlorhydria had been omitted. The etiological relationship of achlorhydria and atrophic gastritis with gastric cancer is strongly supported by these results. In the achlorhydric-hypochlorhydric group the incidence of gastric cancer is 4.5 times greater and in the pernicious anemia group 21.9 times greater than in the same segment of the normal population. These studies indicate that in pernicious anemia patients gastrointestinal roentgenograms should be made at 6-month intervals and in patients with achlorhydria or hypochlorhydria at 9-to-12-month intervals. Additional studies of achlorhydric persons, by means of the Schilling test, indicate that about 5% have preclinical pernicious anemia. Further refinement of the groups that require repeated study may be possible through the application of tests of this kind.

Resection in Pulmonary Tuberculosis. B. Gontijo. Rev. brasil. tuberc. **25**:697-706 (May) 1957 (In Portuguese) [Rio de Janeiro].

The author considers resection a better treatment than surgical collapse therapy in the treatment of pulmonary tuberculosis. His experience is based on

V 16
1957

105 patients, who were subjected to pulmonary resection between January, 1949, and May, 1954. Thirty-seven of these had a pneumonectomy, 60 a lobectomy, and 8 a segmental resection. There were 22 instances of postoperative complications. They were, in order of importance, bronchial fistula, dissemination of the process, focus reactivation, empyema without a fistula, and reopening of cavity. Eleven of the 105 patients died. Six deaths were related to the operation proper or took place within a month after the operation. The causes of death were surgical shock in 2, dissemination in 3, and embolism in 1. Five deaths occurred later, all due to a bronchial fistula. Deaths due to surgical shock deserve special mention. The author contends that this was probably due to maladministration of anesthesia, because later, when the technique of anesthesia was improved, no death occurred due to surgical shock. The author considers anesthesia as the most important factor of success in pulmonary resection. The clinical course upon discharge from the hospital was satisfactory. There are also economic and social advantages in pulmonary resection: shorter period of hospital confinement, quicker and better readjustment to normal life, and less physical deformity than after a thoracoplasty.

Thymic Cyst in the Neck: Case Report. A. S. Crawford, P. V. Evans and W. Thompson. J. Indiana M. A. **50:**715-719 (June) 1957 [Indianapolis].

The authors present the history of a 6-year-old boy who had a swelling of 3 years' duration on the right side of the neck. It had existed without symptoms, and was noticed by the parents only when he laughed or cried. About 6 weeks prior to admission the mass began to enlarge, and it became painful on palpation. It had not interfered with eating or swallowing. The cystic mass was lateral to the thyroid; it appeared to be well demarcated from the adjacent structures and was freely movable; it was estimated to be 4 to 5 cm. in diameter and was moderately tender to palpation; it extended laterally to the anterior border of the right sternomastoid muscle. At operation the cyst was found to extend above the right sternomastoid muscle and above the superior thyroid vessels. It was removed by blunt and sharp dissection. The lower portion of the cyst extended into the superior mediastinum. When the cyst was accidentally ruptured during dissection it yielded a thick, brown-red fluid. At this time it was noted that the surrounding tissue had the appearance of thymic tissue. The histological examination revealed thymic tissue in all examined sections of the wall of the cyst.

The authors cite evidence indicating that thymic cysts occur in the neck more frequently than the literature suggests. The case presented proves the advisability of including a posteroanterior roentgenogram in the routine investigation of cystic lesions in the neck. The possibility of malignancy of thymic tissue should be a consideration in lesions of the type under discussion. Two cases of malignancy in aberrant thymus tissue were reviewed, 1 of which was observed in an 11-year-old child and the other in a 58-year-old adult. That in the child was located in the neck.

Giant Chondroma of Maxilla Making Necessary Hemifacial Removal of Tumor with Enucleation of the Eye. A. García Blanco and E. Planas García de Dios. Rev. espān. oto-neuro-oftal. **14:**130-134 (March-April) 1957 (In Spanish) [Valencia, Spain].

Giant chondroma of the maxilla is extremely rare. A 34-year-old woman complained of respiratory difficulty, eye symptoms, and headache of 1 year's duration. An enormous exophthalmos of the left eye caused lacrimation, loss of vision, and pain over the eye and the supraorbital region. Roentgen therapy in two series of 14 and 36 sessions, respectively, did not bring relief. Roentgen examination of the head showed a tumor which occupied the entire left ethmoido-orbital region. Biopsy demonstrated a chondroma. An operation was performed with the patient under general anesthesia with intubation. The tumor included the entire left ethmoidal and orbital regions, the eye, the septum, and the right turbinate bones. The tumor was extirpated with an electric knife, and the eye was enucleated. The patient was given 300 cc. of blood during the operation. Antibiotics were given in the immediate postoperative period. Histopathological examination of the tumor confirmed the diagnosis of a chondroma. The postoperative period was uneventful. The patient was discharged 1 month after the operation. She was requested to report in 2 months for a plastic repair of the mutilated region.

NEUROLOGY & PSYCHIATRY

Prognosis in Hemiballismus. H. H. Hyland and D. M. Forman. Neurology **7:**381-391 (June) 1957 [Minneapolis].

The occurrence of hemiballism is reported in 6 women and 8 men between the ages of 26 and 84 years. In one 26-year-old man the condition became manifest after a cerebral trauma caused by a severe blow on the left temporal region. Hemiballism developed in a 42-year-old man at the time of an exacerbation of multiple sclerosis of 17 years' duration. The hemiballism was considered to be a result of cerebrovascular disease in the remaining 12 patients, whose average age was 72 years. In great contrast to the generally accepted unfavorable prognosis, spontaneous recovery occurred in 12 patients. Four patients had hypertension and 2 had diabetes mellitus. In several patients there was evidence of myocardial disease and/or diffuse cerebrovascular disease. The rapidly executed extensive involuntary movements of the limbs of one-half of the body which characterized the clinical picture lessened in severity after 1 to 3 weeks and usually subsided completely during the next 4 to

9 weeks. There was only 1 patient in whom cessation of the hyperkinesis was rather abrupt, occurring 5 days after the onset. This patient had a number of cerebral softenings caused by cardiac emboli, including that which had destroyed the subthalamic nucleus. It was thought possible that another vascular lesion may have involved other pathways and in some manner offset the effect of the damage to the subthalamic nucleus, thus causing the hemiballism to stop.

Treatment consisted of good nursing care combined with the use of hypnotic drugs in most of the 12 patients in whom the hemiballism subsided spontaneously. The prompt relief of symptoms in 2 patients who were given chlorpromazine suggested that this drug had a specific effect in controlling the hemiballism, but it was ineffective in 1 other patient. One of the 2 patients in whom hemiballism failed to subside spontaneously died with the disorder, and the other would probably have died had cerebral pedunculotomy not been performed successfully. It is suggested that spontaneous recovery from hemiballism is more likely to take place if the lesion involves the afferent connections of the subthalamic nucleus and the latter escapes destruction. There was evidence in 4 patients that this had occurred. Autopsy revealed the lesion in this situation in 1 patient who died 2 months after recovery from hemiballism. There were 3 other patients with spontaneous recovery who had signs of thalamic involvement occurring simultaneously with the hemiballism. The occurrence of these manifestations together makes it seem probable that hemiballism was caused by damage to the afferent connections rather than the subthalamic nucleus itself. The results obtained in the patients suggest that many will recover with conservative measures alone. Neurosurgery should be necessary only in patients with a long unremitting course or in whom deterioration due to exhaustion renders it essential.

Some Neurological Aspects of Epilepsy: Analysis of 407 Cases of Epilepsy from the Clinical and Etiological Point of View. I. Alfandary. Harefuah **52**:283-288 (June 2) 1957 (In Hebrew with English Summary) [Tel Aviv, Israel].

Of 407 patients with epilepsy who were studied in an attempt to determine its cause, it was not possible to do so in 138 patients (33.9%). However, 34 (25.3%) of the 138 patients showed other signs of involvement of the central nervous system or of delayed mental development; consequently an organic origin, most often obstetric trauma, seemed to be likely. Cryptogenetic or idiopathic epilepsy was suspected in only 33 (8.2%) of the patients. Several causative factors may often be present in the same patient, such as obstetric trauma or accidental trauma and heredity or migraine. It may be difficult to decide which of these causes could be the decisive factor.

Birth or accidental trauma were the 2 main causes identified in 122 patients (30%). Next in order were cerebromeningeal infection and tumor. Heredity is not a common cause, since it was identified in only 37 patients (9%). Cases with similar heredity were not always of central encephalic type. In 2 cases, the father had late epilepsy of cortical type and the child had early epilepsy either of cortical or of central encephalic type. These findings confirm the importance of a predisposing factor. Tonic and akinetic types of seizures occurred in children with serious brain damage, especially lesions of the brain stem. A satisfactory explanation of the "paralytic," inhibitory, or negative seizures is still lacking. These convulsive attacks are manifested by paralysis of one or several extremities, absence of feeling of a part of the body, hemianopsia or scotoma, arrested thinking, or a sensation of empty stomach. Inability to understand words or to utter them most probably belongs to the same group. Succession of a negative hallucination after a positive one of the same type is noteworthy. The anatomic and psychic types of auras were observed most frequently. The various forms of partial seizures are discussed with regard to differences in the auras. Psychomotor epilepsy is not a homogeneous group with regard to clinical aspect and anatomic and electroencephalic findings. It might be classified with the focal forms of epilepsy, although its identification with temporal epilepsy does not seem to be entirely justified.

Protection Against Reserpine-Induced "Parkinsonism." H. A. Rashkis and E. R. Smarr. Am. J. Psychiat. **113**: 1116 (June) 1957 [Baltimore].

When 24 schizophrenic patients were given reserpine, either alone or in combination with other drugs, 9 developed the characteristic Parkinsonism-like syndrome. Twelve patients received reserpine alone, 12 patients trihexyphenidyl alone, and 24 patients reserpine in combination with trihexyphenidyl. It was found that giving trihexyphenidyl with reserpine afforded protection against the development of a Parkinsonism-like syndrome. In view of this finding it has become their practice, whenever prescribing reserpine in large doses, to initiate therapy with trihexyphenidyl immediately instead of waiting for a Parkinsonism-like syndrome to develop.

Congenital Syphilis as a Cause of Mental Deficiency. C. B. Courville. Bull. Los Angeles Neurol. Soc. **22**:85-90 (June) 1957 [Los Angeles].

The history and autopsy report of a Negro girl who died at the age of 9 years as the result of tetanus is presented. She had sustained an abrasion of the left knee while playing in a freshly fertilized flower bed. The child had been mentally defective since birth and was spastic. The Wassermann test on blood from the umbilical cord had been strongly positive at birth, but no symptoms were noted until the child was 9 months of age, when strabismus became apparent. A retarded mental state was noted later. She had made fair progress in school

V 16
1957

for retarded children. Autopsy was performed, and death was considered to be due to tetanus. The brain was examined in a neurological laboratory. There was an atypical basilar artery and vascular anomaly of the left cerebellar hemisphere; widespread increased pial vasculature; perivascular lymphocytic accumulations; and diffuse and patchy loss of cortical nerve cells. Mental deficiency as well as cerebral palsy was the apparent result of congenital syphilis.

The presence of marked perivascular round cell accumulations in the cerebral cortex of a 9-year-old girl indicates a continued effect of the syphilis from the intrauterine period to the time of her death. This effect was exerted very likely through the medium of the circulation, as suggested by the predominant loss of nerve cells in the upper cortical layers, which ordinarily have an abundant blood supply. This is not difficult to understand, since syphilis is primarily a vascular disease. The absence of notable structural changes in the cortical arteries also suggests that this circulatory disturbance was probably functional in nature. In the past, congenital syphilis played a significant role in the production of mental deficiency. The incidence averaged approximately 6% in the period ending about 1935. In the past 20 years, it has dropped to about 4%. It is to be anticipated that in the future syphilis will play a decreasing role in the causation of mental deficiency, thanks to the efficiency of antibiotic therapy. The pathological changes found in the central nervous system in those who die in childhood or early adolescence are syphilitic meningitis, syphilitic vascular disease (including endarteritis), or congenital paresis. In those who die after the age of 16 years, chronic meningovascular syphilis is more likely to be present, the chronic meningeal or meningovascular form being less likely to bring about a fatal issue.

Arterial Hypertension in Poliomyelitis. E. Kemp. Acta med. scandinav. **157**:109-118 (No. 2) 1957 (In English) [Stockholm].

This report is based on experience gained in Blegdamshospitalet in Copenhagen during an epidemic of poliomyelitis in Denmark in 1952. Frequent blood pressure measurements proved valuable in discovering imminent or existing hypercapnia or hypoxia. Some patients had acute kidney lesions, which probably caused hypertension. In other patients, however, who apparently were well-ventilated and without kidney lesions, hypertension developed and occasionally persisted in spite of marked clinical symptoms of shock. An attempt was made to elucidate whether the hypertension in these patients was due to lesions in the central nervous system. The blood pressure was measured in 337 patients with poliomyelitis; this number included some from an earlier epidemic. The development of hypertension during poliomyelitis was influenced by neither the age nor the sex of the patient; it occurred with equal frequency in children and adults and in males and females. Hypertension persisting for days was observed during the acute stage of poliomyelitis in 55% of the patients who died; in 30% of those with bulbar, 45% of those with the bulbospinal, and in 40% of those with severe spinal forms of poliomyelitis. Neither artificial ventilation nor hypoventilation or hyperventilation seemed necessary or sufficient causes for the development of hypertension persisting for days in poliomyelitis patients treated with present-day methods. Azotemia, or changes in the spinal medulla, in the diencephalon, or the telencephalon likewise did not seem to play a part. Observations in the course of the present study suggested, however, that ganglionic cell degeneration in the nucleus magnocellularis in the medulla oblongata is a necessary condition for the development of hypertension.

Changes in the Nervous System in Acute Porphyria. R. Hierons. Brain **80**:176-192 (June) 1957 [London].

The author describes studies on the nervous system of 5 patients with acute porphyria and discusses the findings in relation to the clinical features of the disease. Abnormalities were present in the anterior horn cells of the spinal cord in all of these patients. Chromatolysis was clearly secondary to axonal damage. It seems extremely unlikely that axonal damage can explain the vacuolation of the cytoplasm in some of the neurons and also the presence of shrunken cells. It is suggested that vacuolation is a stage in cell loss. Material from the peripheral nerves was available in 3 of the patients. The peripheral nerve lesions probably result from a metabolic disturbance and not from a vascular spasm. The neuronal changes in the anterior horn cells are probably also of metabolic origin. Extensive vascular lesions were observed in the brain, but these were probably secondary to severe hypertension or respiratory paralysis and were not the cause of the severe mental disturbance. The mental disturbances are probably due to a direct, possibly reversible, metabolic effect of the disease; and this may result in some loss of neurons in the brain and cerebellum similar to that in the spinal cord.

Brain-Stem Encephalitis. E. R. Bickerstaff. Brit. M. J. **1**:1384-1387 (June 15) 1957 [London].

A syndrome of brain-stem encephalitis not previously described in the literature, involving a prodromal period of general malaise and mild pyrexia, gradual signs of midbrain disturbances, and no cardiac and respiratory embarrassment, is

reported in connection with the observation of 4 additional cases. No significant connotation is accorded age, sex, and geography in the classification and description of early signs and symptoms. The period of onset was gradual, lasting from 1 to 3 weeks and featuring general malaise, drowsiness, headache, and some muscular aching. Early symptomatology included mild headache, marked drowsiness, double vision, vomiting, ptosis, defective conjugate eye movements, dysarthria, unsteadiness of gait, and low-grade pyrexia. Progress from onset to maximal disability ranged from 1 to 8 weeks, while further progress to total recovery varied from 1 to 17 months. At the point of maximal disability there was partial to complete ophthalmoplegia, bilateral paralysis of the motor branch of the trigeminal nerve, total bilateral facial paralysis, deafness, gross paralysis of the 9th, 10th, 11th, and 12th cranial nerves, complete anarthria, and loss of tendon reflexes except plantar extensor response. During the stage of return of neurological function some of the patients developed an extrapyramidal type of rigidity and others a Parkinsonian tremor or emotional lability. These more recent developments disappeared shortly after they appeared. It is significant that neurological recovery has been complete in all the cases observed save 1, with the exception that intellectual deficit occurred in one patient to the extent that it interfered with his education. The outstanding feature of these cases is the dramatic total recovery after subacute development of disturbed brain-stem function so gross that at one stage survival even for a few days seemed impossible.

Rehabilitation of 250 Patients with Chronic Sequels of Acute Poliomyelitis by Intra-arterial Growth Hormone Treatment. E. Henríquez, A. Bueno García, J. Pérez Alama and others. Rev. med. hosp. gen. **20**:321-329 (May) 1957 (In Spanish) [Mexico, D. F., Mexico].

The authors have previously reported satisfactory results from the administration of intra-arterial injections of growth hormone in treatment of chronic sequels of acute poliomyelitis (abstracted in THE JOURNAL [**162**:1665-1666 (Dec. 29) 1956]). Results in 250 patients who had a follow-up of more than 1 year are reported in this article. The patients were of both sexes and were between the ages of 1 and 27 years. Sequels had lasted between 6 months and 25 years prior to the treatment. The drug was given in doses of from 1 to 3 cc. in 1.5 cc. of saline solution for each injection. The injections were made into the femoral artery for sequels in the legs or into the subclavian artery for sequels in the arms. They were given once a week to a total of 3 to 8 injections for each limb treated. The following results were observed: The treated limb increased in size at an average monthly rate of 0.5 to 1 cm. in 145 cases. It did not change in 5 patients. The muscles increased in thickness at an average monthly rate of 0.5 to 1.5 cm. Muscular movement, muscular tonicity, local temperature of the skin, and the patellar, plantar, and achilles reflexes appeared or increased in almost all of the cases. Complete recuperation (100%) was obtained from complete functional incapacity (100%) in 39 cases, from moderate incapacity (50%) in 58 patients and from marked incapacity (75%) in 107 patients. Marked functional capacity (75%) from marked functional incapacity (75%) was obtained in 46 patients. In the course of the treatment transient hyperglycemia was observed in 2 cases, lowering of the erythrocyte count in 2 cases, and an acute headache in 2 cases. These disturbances were controlled by diminishing the dose of the growth hormone. Roentgen examination of the bones showed increase of thickness and of the length of the bone and improvement of osteoporosis. The muscular reactions to faradic and galvanic currents and the chronaxia of the muscles increased. The improvement obtained had not changed 1 year after completion of the treatment. Regression of the sequels did not occur. The authors conclude that the intra-arterial injections of growth hormone secures cure or great improvement of the chronic sequels of poliomyelitis.

Early Symptoms of Multiple Sclerosis: A Survey of Eighty-Two Cases. C. H. Imes. Bull. Los Angeles Neurol. Soc. **22**:91-94 (June) 1957 [Los Angeles].

This study was undertaken to discover what the early symptoms of multiple sclerosis had been in patients seen in a Los Angeles Hospital during the years between 1933 and 1951, in order to determine whether a benign climate like that of southern California would alter the course of this disease, especially during its early phase. The fact that some of these patients had moved to southern California after the onset of the disease modifies the figures somewhat. The records of 82 patients in whom the diagnosis was reasonably assured were studied. Sixty-five per cent of the patients had only 1 symptom at the onset, whereas the other 35% had 2 or more symptoms. A survey showed that 29% had visual symptoms and 33% had symptoms of the motor system, 29% had sensory symptoms and 33% had symptoms affecting coordination. Speech was affected early in 2 patients; the sphincters in 8 patients; and 1 patient had progressive fatigue. Other reports had revealed a similar incidence of early symptoms. The time interval between first onset and the consultation on which this survey is based indicated a more benign course extended over a longer period of years for patients in this mild climate than in those living in more severe climates.

GYNECOLOGY & OBSTETRICS

Identification of and Therapy for Vaginal Candidiasis. H. L. Pickhardt and J. L. Breen. Am. J. Obst. & Gynec. **74**:42-46 (July) 1957 [St. Louis].

In 23 obstetric patients and in 50 gynecologic patients with symptoms of a vaginal infestation, such as malodorous vaginal discharge, itching, burning, and general discomfort, particularly on walking, a specimen was removed from the posterior fornix or lesions along the vaginal wall with a sterile, cotton-tipped applicator and cultures were made on Nickerson's medium. Cultures positive for Candida were obtained from the specimens of 19 of the 23 obstetric patients and of 35 of the 50 gynecologic patients. The clinical impression of vaginal candidiasis was thus confirmed in 82.6% of the obstetric patients and in 70% of the gynecologic patients. Clinical diagnosis of candidiasis based on symptomatology and physical findings is not perfect, and cultures should be used to support the impression.

Nineteen obstetric and 35 gynecologic patients with cultures positive for Candida were treated for 2 weeks by inserting one applicatorful of a new gentian violet cream intravaginally at bedtime. Six obstetric patients and 2 gynecologic patients were lost to follow-up. Of the remaining 13 obstetric patients, 10 had 1 course of treatment and 3 had 2. Of the 32 gynecologic patients, 22 had 1 course of treatment, 6 had 2, 4 had 3, 1 had 4, and 1 had more than 4. An almost complete culture cure was obtained with a maximum of 2 courses of therapy in the obstetric patients. Similarly, the over-all culture cure in the gynecologic patients was practically ideal, but repeated courses of therapy were required in 11 patients, and 1 patient remained culture-positive after 5 courses of therapy. The gentian violet cream thus has been shown to be an ideal medical therapeutic agent for patients with proved candidiasis. Associated vaginal infections with Trichomonas vaginalis persisting after the eradication of Candida were found in 3 obstetric and 7 gynecologic patients.

Prophylaxis and Therapy of Postoperative Thromboembolism. H. Wimhöfer. Medizinische No. 24, pp. 900-903 (June 15) 1957 (In German) [Stuttgart, Germany].

According to Wimhöfer there are 3 methods of prophylaxis of thromboembolism in women undergoing laparotomy. First, the surgeon should watch for the type of patient with a tendency to thrombosis, characterized by constitutional peculiarities, age, poor circulation, and varicose veins. Certain primary disease and certain operations favor the occurrence of thromboembolism. Second, one should watch for prodromal symptoms, such as pain in the calf occurring either spontaneously or being elicited by pressure, pain associated with dorsiflexion of the foot (Homan's sign), and pressure pain in the sole of the foot (Payr's sign). Unexplained acceleration of the pulse and rise in temperature and the absence of postoperative normalization may also be included in this symptomatology. Of 1,506 women who underwent laparotomy at the gynecologic clinic of the University of Heidelberg, Germany, 225 were suspected to be threatened by thromboembolism depending on the criteria listed above. Of the 225 patients, 7.1% had thromboembolism and 4.9% had infarctions. Of the 1,281 patients, 1.5% had thromboses and 0.62% had infarctions. The data show that these 2 methods of selecting patients for prophylactic treatment of thromboembolism are not entirely satisfactory.

The third method of selecting patients for prophylactic treatment of thromboembolism consists of the application of the more recent knowledge of the physiology and pathology of the coagulation of the blood. Hartert's recalcification test performed with the aid of the thromboelastograph provides a more satisfactory result than the Quick test. Of 2,176 women who were subjected to this test, 1,048 did not show signs of a disturbance of coagulation; thrombosis occurred in 1, mild infarction in 2, and fatal embolism in 1 of these. 768 patients had a shortened coagulation time and were given prophylactic treatment; of these, 2 had mild thrombosis, 17 had mild infarction, and 2 had severe infarction. There was no fatal embolism. Early recognition and early institution of treatment prevented the development of thrombosis and the development of large and fatal embolism. Of 45,348 obstetric and gynecologic patients operated on between 1933 and 1950, thromboembolism occurred in 1.21% and fatal embolism in 0.17%. Of 13,288 women operated on between 1951 and 1954, the period during which properly directed prophylaxis was practiced by making use of all 3 methods of selection of patients for anticoagulant therapy, 1,388 were treated with 3-(1-phenylpropyl)-4-hydroxycoumarin (Marcoumar). The rate of thromboembolism among these patients was reduced to 0.32%. Fatal embolism occurred only in patients who had not received prophylactic treatment, and its incidence was 0.023%.

PEDIATRICS

A Case of Phenylketonuria with Borderline Intelligence. D. Y-Y. Hsia, W. E. Knox and R. S. Paine. A. M. A. J. Dis. Child. **94**:33-39 (July) 1957 [Chicago].

Phenylketonuria is a congenital inborn error of metabolism associated with mental deficiency in which loss of enzyme activity predisposes to an inability to convert (oxidize) phenylalanine to tyrosine.

This condition is clinically manifested by large amounts of phenylpyruvic acid in the urine and high fasting plasma phenylalanine levels. An otherwise typical case of phenylketonuria in a child with near normal intelligence has been carefully documented. The existence of such cases has been reported (phenylketonuria with near normal intelligence), but none have been established. The patient was one of 2 sisters with similar biochemical disturbances, one of whom is severely retarded (IQ 4) and the other only mildly affected (IQ 78) and able to move about in society. Phenyllactic acid, *o*-hydroxyphenylacetic acid, indoleacetic acid, and phenylacetylglutamine were present in the urine in amounts usually found in phenylketonuria. Normal heterozygote carriers had plasma phenylalanine levels twice those of normal persons (0.21-0.50) after an oral dose of L-phenylalanine, while the phenylalanine level of the phenylketonurics was zero. From these data the parents and the brother were found to be heterozygous and the patient and her sister homozygous. Thus, this typical homozygous form of phenylketonuria may be associated with borderline intelligence. The existence of such cases showing unusual mental development points to the possible future discovery of new avenues of therapy in addition to the prevention of high plasma phenylalanine levels by the use of low-phenylalanine diets.

Gastroschisis: Report of a Case. W. B. Kiesewetter. A. M. A. Arch. Surg. **75**:28-30 (July) 1957 [Chicago].

Gastroschisis is a congenital deformity, peculiar to lower animals as well as humans, in which the abdomen remains open. A possible explanation of this condition is that there is an abnormality of the somites forming the anterior abdominal wall which permits faulty development of a portion of the wall, resulting in a herniation through this defect. The umbilical cord development is normal, as the defect is extraumbilical, but not infrequently there is a complete absence of a peritoneal sac, resulting in marked enlargement and thickening of the intestines. This is the 10th case reported; in 2 cases there were successful surgical corrections. Excision of a black, gangrenous intestine protruding from an aperture to the right of the umbilicus and removal of the narrow orifice through the anterior abdominal wall was followed by a jejunotransversecolostomy. The immediate postoperative course was excellent, considering the minimal intestinal surface area available for absorption. The terminal series of events was characterized by an increasing number of stools with a concomitant weight loss. This case is unique in that a live-born child with this deformity presented strangulation of the intestine due to narrowing of the abdominal wall defect, something that other reported cases did not present.

Results of BCG Vaccination of the Newborn: Observations on the Exposure to and Development of Tuberculosis in 76 Children Vaccinated with BCG at Birth. P. Dannenbaum and A. Bingel. Deutsche med. Wchnschr. **82**:919-921 (June 7) 1957 (In German) [Stuttgart, Germany].

At the immunization center of the Municipal Children's Clinic of the city of Braunschweig about 95% of the newborn infants are being immunized against tuberculosis with BCG vaccine; 19,000 newborn infants were subjected to this vaccination in the years between 1949 and 1955. Provided a correct technique is employed, the newborn infants tolerate the BCG vaccine exceptionally well; in only 2 or 3% was there a discharge from the site of vaccination, and ulcers of more than 5 mm. in diameter were rare. Abscess formation of the inguinal lymph nodes was practically never observed. Intracutaneous tuberculin tests (1:100) showed that 95% of the infants achieved tuberculin allergy within 12 weeks. The authors gave special attention to the infants who were exposed to tuberculosis in their environment. When investigation revealed that a person with tuberculosis lived in the same house or camp with the infant but did not belong to the family or that a person within the infant's family had a noncontagious form of tuberculosis, the infant remained at home, but the parents were given strict instructions that, until the tuberculin test had demonstrated that the child had become immune, the child must be protected against exposure; this is relatively easy at this early age. These infants were given special supervision by the immunization center (repeated roentgenologic controls). Tuberculosis did not develop in any of the 248 vaccinated infants.

If a source of infection was known within the family group, the newborn infant was vaccinated with BCG and kept in a children's home until the vaccination had taken effect (proved by a test), after which the child was returned to the parents. Infants whose mothers had open tuberculosis were treated in the same way, provided the infant could be immediately separated from its mother. When this proved impossible, and no matter how short the exposure, the infant was isolated at the clinic for from 6 to 8 weeks, and, if the tuberculin test (1:100) then proved negative, BCG vaccination was carried out; this was followed by another period of isolation until allergy to tuberculin could be demonstrated, and after that the child was returned to its home. The authors studied 76 children who after BCG vaccination during the newborn period grew up in families in which they were exposed to tuberculous infection. The period of observation ranged from 1 to 5 years. Tuberculosis did not develop in any of these children. During this same period 118 children of the same age group were referred to the center for tuberculous children, the diagnosis of tuberculosis being es-

tablished by tests and roentgenologic examinations. None of these 118 children had received BCG vaccine. The social and economic status was about the same in the vaccinated and in the nonvaccinated children. During the same 6-year period the authors received reports of 20 children in whom tuberculosis seemed to have developed despite BCG vaccination during the newborn period. In 14 of these children the presence of tuberculosis could not be established, and further studies disclosed such disorders as atypical pneumonia, changes in the hilus region, enlargement of the thymus, and pneumonic lesions resulting from whooping cough. The active tuberculosis in the other 6 children could not be ascribed to failure of BCG vaccination because the infant had been continuously exposed to open tuberculosis since birth and had become infected during the preallergic phase.

Wilms' Tumor: Three Cases. C. P. Teixeira. Rev. brasil cir. 33:369-378 (April) 1957 (In Portuguese) [Rio de Janeiro].

The author reports three cases of Wilms' tumor in children 2½, 1½, and 1 year old. Two were boys and one a girl. The tumor appeared 8, 6, and 3 months, respectively, prior to the consultation. It was located in the right kidney in all 3. The diagnosis was made on the clinical symptoms and the results of pyelography. It was observed during the operation that the tumor grew toward the abdomen and displaced the liver and intra-abdominal structures to the left. The removed tumors from the boys weighed 4 and 2 kg., respectively, and the one from the girl 800 Gm. Histological examination confirmed the diagnosis of embryonal carcinosarcoma. The first and third patients died a few hours after the operation. The second patient survived the operation and was given roentgen therapy, up to a total of 1,490 r. He was discharged as clinically cured 3 months later. Four months after the operation, however, he was blind from metastases in the chiasm. The fundi of the eyes were normal. The condition of the patient deteriorated rapidly, and he died 8 months after the operation.

The "Passing-Out" of Infants and Young Children: Cause and Treatment. P. Janson. München. med. Wchnschr. 99:779 (May 24) 1957 (In German) [Munich, Germany].

In infants and even more often in children between 1 and 6 years of age an emotional outburst accompanied by angry crying may result in arrest of breathing during the expiratory phase, followed by rolling of the eyes, thrashing about, cyanosis, and even loss of consciousness so that life seems threatened. The parents may become frightened and call the doctor, but after a few moments of "staying away" and after a deep inspiration the child regains consciousness. This "passing-out," "staying away," or rage fit is an emotional respiratory convulsion, usually in neuropathic children, and should not be overestimated. It should be controlled by pedagogic measures. It is a mistake to yield to the whims of these children for fear of eliciting a fit. When one develops, an energetic rather than a frightening attitude is necessary. A slap or a dash of cold water will not only abort an attack but will also reduce or prevent future ones. A change in environment or antineuropathic methods may be necessary if parents cannot apply such measures. Calcium and sedatives may prove effective, and in severe cases the author has obtained results with an injection of distilled water.

OPHTHALMOLOGY

Retinopathy of Prematurity (Retrolental Fibroplasia) in Children in Whom the Disease has not Progressed to Complete Blindness, and the Subsequent Investigation of Cases of Myopia. I. D. R. Gregory. Brit. J. Ophth. 41:321-337 (June) 1957 [London].

A follow-up of 30 children with incomplete retrolental membranes was carried out. The children were known to have had retrolental fibroplasia in infancy, but some degree of vision could be expected. The clinical picture of these children was typical and included a myopic error of refraction in 26 children. The myopia varied from –2.5 to –18 D. Commonly the eyes were equally affected by retinopathy. Nystagmus was present in half of the patients, in 5 associated with eccentric fixation. Microphthalmic eyes were found in 14 children; these usually possessed little vision and frequently showed a convergent squint. Strabismus was present in 17 patients, secondary to the eye disease, which had led to gross visual impairment of the squinting eye. Opacities in the ocular media were frequently encountered. Three children with grossly damaged eyes showed corneal opacities, and one presented lenticular opacities; in two-thirds of the children vitreous opacities were evident. Malformations of the optic nerve-head were noted in 14 patients. Thinning, atrophy, and depigmentation of the retina were commonly encountered. Retinal detachment was evident in 14 patients and retinal folds were apparent in 6.

The noxious effect of the rubella virus on the developing eye occurs in the first 3 months of pregnancy, and the effect of prematurity on the eye takes place in the neonatal period. There appears to be a fundamental resemblance between the 2 in their effects on ocular development. The finding that retinopathy of prematurity is associated with myopia and that it has been possible to correlate myopia with prematurity suggests that prematurity is one of the factors which cause myopia. The new finding provokes further inquiry as to the nature

of the myopia and the mechanism of its production. More use of the term "retinopathy of prematurity" should be made, in view of the wide variety of clinical findings covered by this title.

THERAPEUTICS

Value of Troformone in Radiodermatitis. J. Lelièvre and A. Maschas. Presse méd. **65:**1034-1035 (June 1) 1957 (In French) [Paris].

The authors have operated on 84 patients with radiodermatitis during the last 6 years, in all but 1 of whom the skin lesions followed x-ray treatment for corns, calluses, and plantar verrucae. Satisfactory information about the irradiation technique could not be obtained in many cases. Those in which it was available fell into 3 classes: (1) cases in which the x-ray dose was excessive or the filtration inadequate; (2) cases in which the technique was faultless but the patient, fearing operation, had falsely denied having previously had x-ray treatment; and (3) some 20 cases in which neither the technique nor the patient was at fault. Two more or less related causes may explain the occurrence of postradiation skin lesions in the third group: (1) the exceptional sensitivity to irradiation of the skin of the foot, which is poorly vascularized, and (2) the fact that the irradiated area is constantly subjected to irritation from the footwear and, when it is on the plantar surface, by the weight of the body. Corns, calluses, and plantar verrucae, in fact, usually appear at pressure points, and since, on the whole, x-ray treatment produces vascular sclerosis, it is easy to see that even a slight circulatory disturbance may precipitate the appearance of lesions. These same conditions of skin sensitivity and exposure to constant irritation also explain the difficulties encountered in treating radiodermatitis of the feet, especially when the lesions are extensive. The therapeutic dilemma lies in the fact that failure to excise all the injured tissue will be followed by recurrence, while wide excision will create difficult replacement problems. The skin is not elastic enough to permit approximation of the edges of the wound; a rotation flap may fail because of poor vascularization; and the cross leg flap procedure is open to objection, not only because it takes time and is painful but also because the skin used retains its original characteristics and never acquires the pressure-resistant capacity of genuine plantar skin.

The authors found that the problem presented in cases of this kind is greatly simplified by simple excision of the necrotic tissues followed by local applications of troformone (the trophic hormone of the pancreas). The effect of this treatment in 4 patients with extensive, exceptionally severe radiodermatitis was dramatic, amounting in each case to a restitutio ad integrum and enabling the patient to resume his normal activity within a short time. One of the patients, the only one who had been given radiotherapy for a condition other than corns, calluses, or plantar verrucae, had an area of fetid ulceration measuring 25 by 15 cm. at the site of an enormous fibrosarcoma on the right thigh. The tumor had been completely eradicated by large doses of x-rays, but some time after the treatment ulceration had begun in the irradiated area. The patient consulted several surgeons, but all of them believed that any attempt at operation would be certain to fail. He was then referred to the authors, and in May, 1954, they excised the necrotic tissue. Six weeks later, a clean surface was obtained by curettage and 10 days later treatment with troformone was started. A third and final operation was made necessary a week later because the necrosis had extended to an adjoining indurated area, but after this last operation recovery proceeded steadily, and by the end of September the defect was completely filled with sound tissue, pain had ceased, and the patient was leading a normal life.

Experience thus shows that when troformone therapy is associated with excision of sclerotic areas, which is essential to the success of the treatment, a complete cure can be expected in patients with radiodermatitis. The treatment is simple and painless; the reconstituted skin is practically normal and infinitely more resistant than a plantar graft; and, even if the reconstitution should prove inadequate in a given case, the restoration of the underlying tissues would make it easy to apply a free graft.

V 16
1957

PATHOLOGY

Diffuse Scirrhous Carcinoma. E. Fischermann. Danish med. bull. **4:**93-96 (May) 1957 (In English) [Copenhagen].

Diffuse scirrhous carcinoma is a form of cancer so far observed only in women. The term refers to its infiltrative growth. The primary tumor appears to originate in the breast, but the tumors have also been found in the bladder without a primary tumor in the breast. Although the tumor is small and progresses slowly, there may be extensive metastases in all smooth musculature. Two cases of diffuse scirrhous carcinoma in women aged 48 and 73, respectively, are reported. Medical aid was sought in each case for dyspeptic disorder, which was due to metastases in the smooth muscles of the gastrointestinal tract. The infiltration in the mammary tissue was limited, and a well-defined tumor was palpable. Diffuse scirrhous carcinoma is not a prestage of colloid cancer. In spite of its slow growth, the tumor is not only highly malignant but also insidious, as it does not give rise to symptoms until the metastases have become widespread.

BOOK REVIEWS

Clinical Toxicology: The Clinical Diagnosis and Treatment of Poisoning. By S. Locket, M.B., B.S., M.R.C.P., Senior Physician, Oldchurch Hospital, Romford, Essex. With special sections on The Identification and Estimation of Some Common Toxic Substances, by W. S. M. Grieve, M.Sc., Ph.D., F.R.I.C., Biochemist, Oldchurch Hospital, and The Identification and Botanical Characteristics of Some of the More Frequently Encountered Poisonous Plants, by S. G. Harrison, B.Sc., Senior Scientific Officer, Royal Botanic Gardens, Kew, England. Cloth, $20. Pp. 772, with 27 illustrations. C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1957.

Although the hospital unit of which the author is in charge is primarily concerned with barbiturate poisoning, it has a growing reputation as a toxicologic center. For this reason, it draws cases of many types of poisoning from a wide area. Because the hospital is situated in a highly industrialized district, the physicians also see and treat many patients with industrial poisoning. This is one of the few books on clinical toxicology written by a physician in active clinical practice in the field of toxicology. The author emphasizes the fact that there is not a specific remedy or line of treatment for each type of poisoning, and only in a few cases does treatment involve intricate or unusual procedures not encountered in general practice. The basic treatment of poisoning is symptomatic and supportive. This book is designed to help the physician in the diagnosis and treatment of poisoning.

Part 1 relates treatment to the systems which may be involved, disorders that may occur, and the toxic agents responsible; part 2 describes the symptoms and treatment for individual toxic agents; and part 3 contains special sections on the identification and estimation of common toxic substances and the identification of poisonous plants contributed by experts in these fields. Parts 1 and 2 give the author's personal experience in the treatment of poisoning and the rationale of treatment. The material is illustrated with well-documented case histories, and an extensive bibliography is provided at the end of each chapter. Unfortunately, the classification of toxic agents is often confusing, as material concerning one agent or class of agents may be found in several sections of the book, thus entailing a great deal of cross reference. However, in cases of emergency, one can refer to the index of treatment. In addition there are three other indexes—author, plant names, and subject. This book is recommended as a basic reference in clinical toxicology.

These book reviews have been prepared by competent authorities but do not represent the opinions of any medical or other organization unless specifically so stated.

International Congress of Gastroenterology. Fifth Meeting of l'Association des sociétés européennes et méditerranéennes de gastro-entérologie, London, July 18-21, 1956. Reprint from Gastroenterologia, vol. 86, nos. 3, 4 and 5 (1956). [In English and French.] Cloth. Pp. 766, with illustrations. S. Karger AG., Arnold Böcklinstrasse 25, Basel, Switzerland; (American agent—Mr. Albert J. Phiebig, P. O. B. 352, White Plains, N. Y.), 1957.

This book offers an unusual collection of papers on many important aspects of gastroenterology. The authors, in the main, are distinguished specialists from various countries. Part 1 is made up of contributions on nonmalignant conditions of the esophagus and deals with normal and abnormal motility of the esophagus, organic disorders, radiologic findings, clinical aspects of incompetence of the cardia, and premalignant conditions of the alimentary tract. Part 2 covers gastric physiology, hepatic coma, liver and biliary tract diseases, the cause and treatment of peptic ulcer, carcinoidosis, and celiac disease. There are papers dealing with precancerous conditions and their diagnosis, the relationship between peptic ulcer and hypoglycemia, and metabolic studies after extensive gastrointestinal resections. Part 3 is devoted entirely to ulcerative colitis.

While it can hardly be said that the essayists of the Congress presented any profound contributions to the subject of gastroenterology, the Congress served to bring together distinguished specialists from all over the world. The investigation and correlation of enviromental influences, which must be legion, in the study of diseases has barely begun. In gastroenterology, particularly, neglect in these areas has been responsible for a dearth of any substantial progress for some years in our knowledge of alimentary tract disease. This book provides an acceptable addition to the literature in this field. It is unfortunate, however, that the articles in the various foreign languages could not have been translated for the English-speaking members of the profession.

Gynecologic Surgery and Urology. By Thomas L. Ball, M.D., Assistant Professor of Clinical Obstetrics and Gynecology, Cornell University Medical College, New York. With foreword by R. Gordon Douglas, M.D., Professor of Obstetrics and Gynecology, Cornell University Medical College. Cloth, $20. Pp. 547, with 161 illustrations by Daisy Stilwell. C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1957.

This volume embodies the essential teaching of the gynecologic staff of the New York Hospital–Cornell Medical Center. It is unique in its presentation of regional surgery as an advance from the

long-accepted organ specialty. That such does truly constitute an advance will be attested by all lighthearted gynecologists who have encountered unexpected and formidable complications in their work. The gynecologist of the future must be competent in the handling of urologic and intestinal complications and sequelae. His training must equip him accordingly, and such is the purpose of this book. It is unfortunate that so many gynecologists have had no training in urology, cannot use a cystoscope or urethroscope, have never inserted a ureteral catheter, and are equally incompetent in intestinal surgery. To many long in practice, this volume will come too late, but they can learn much from it and can institute among their trainees programs to insure future competence. Certainly, resident training should be extended to include this broader concept of gynecology.

Descriptions of operative procedures conform to the best standards and are preceded, step by step, with excellent reviews of the anatomy and physiology of the regions involved. The psychic and psychosomatic aspects of treating the female patient from early childhood to old age are well handled. Technically, there can be no criticism of the work. The large size pages with double columns add immeasurably to the readability of the book. The illustrations are well selected and arranged. The Author and his colleagues are to be congratulated in producing this excellent volume, one that should be available to all gynecologists and trainees in the specialty.

Ultramicro Methods for Clinical Laboratories. By Edwin M. Knights, Jr., M.D., Associate Pathologist, Director of Clinical Pathology and Blood Bank, Roderick P. MacDonald, Ph.D., Director of Clinical Chemistry and Research Advisor, and Jaan Ploompuu, Chief, Division of Ultramicro Chemistry and Research Associate, all of Harper Hospital, Detroit. Cloth. $4.75. Pp. 128, with 19 illustrations. Grune & Stratton, Inc., 381 Fourth Ave., New York 16; 99 Great Russell St., London, W. C. 1, England, 1957.

The increase in the use of chemical tests for the diagnosis of disease has led to a number of problems. One important problem has been the difficulty in obtaining sufficient samples of blood or certain other body fluids for testing. This is especially true in the case of multiple testing in infants or children or in cases where venipuncture is impractical, such as in patients who are extremely obese or who are suffering from third-degree burns. The development of ultramicrotechniques for many blood tests has been a convenient method for surmounting this problem, since individual tests can be run on a few tenths of a milliliter of blood. These tests require special equipment, care, and techniques, and this book groups together the requirements for performing 18 or 20 clinical tests on an ultramicro scale. Discussions of the following determinations, tests, and procedures are included: potassium, sodium, calcium, chloride, inorganic phosphate, acid and alkaline phosphate, urea nitrogen, glucose, cholesterol, bilirubin, protein, and C-reactive levels; icterus index; carbon dioxide–combining power; thymol turbidity; cephalin flocculation; microflocculation tests for syphilis; microhematocrit readings; and electrochromatography. The chapters are organized to contain the principle of each test, a list of the apparatus and reagents needed, the procedure for performing the test, the normal values, and a short discussion of the meaning of each test. The first few chapters of the book are of a general nature, discussing such topics as the setting up of an ultramicrochemical laboratory, special equipment needed for performing the various tests, and the collecting and pipetting of blood. The volume contains a general index.

Outline of Fractures Including Joint Injuries. By John Crawford Adams, M.D., F.R.C.S., Consultant Orthopaedic Surgeon, St. Mary's Hospital, London. Cloth. $6.50. Pp. 248, with 218 illustrations. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2; E. & S. Livingstone, Ltd., 16 and 17 Teviot Place, Edinburgh 1, Scotland; 48 Bloomsbury St., London, W. C. 1, England, 1957.

This book presents a brief classification, the clinical features, and the treatment of the more common fractures. Discussion of fractures of the skull and facial bones is purposely omitted. The line drawings and x-ray illustrations are excellent. The discussion is necessarily limited. The recommended treatment is usually conservative. Certain recommended practices differ from the usual practice in orthopedic centers in the United States. On page 80, the excision of an avulsed fragment of a transverse vertebral process fracture is recommended. Such an operation, as primary treatment, is unusual and not often necessary. The discussion of fractures of the hip is excellent. With regard to fractures of the femoral shaft, traction and manipulation are recommended as routine procedures. The use of intramedullary nail fixation is mentioned for pathological fractures and for occasional use in cases of uncomplicated closed fractures. This is not in accordance with the present practice in the United States of using intramedullary nail fixation for practically all such fractures unless there is a contraindication to this method. There is an illustration of "gallows traction" for treatment of fractures of the femur in a young child; this method is similar to Bryant's traction used for this purpose in the United States. The illustration in the book does not show protection of the knees from hyperextension, and there is no discussion of the danger of vascular complications. The discussion of fractures of the metatarsals and phalanges is brief and probably oversimplified. Future editions should be slightly enlarged to include discussion of a wider range of fractures, including certain complicated common fractures. This book is primarily for students. It is of little value for the orthopedist, but it is an excellent quick reference book for a student or general practitioner.

V 16
1957

QUERIES AND MINOR NOTES

PROCEDURES AFTER RADICAL MASTECTOMY

To the Editor:—*A 24-year-old woman, with two children, the last delivered in July, 1956, has had metastatic (axillary) adenocarcinoma of the left breast. The initial lesion was found in the upper outer quadrant. A radical mastectomy and axillary dissection were completed one week prior to the time of writing. If possible, adrenalectomy and hypophysectomy should be avoided. Chest x-ray and blood studies are normal. What is recommended for further management? Should x-ray sterilization or surgical removal of the gonads be done?*

M.D., Indiana.

Answer.—There is a marked difference of opinion in regard to the questions posed. This consultant feels that there is no adequate evidence that castration done as a complement to radical mastectomy is any better than castration done as a supplement when metastasis or recurrent disease becomes evident. Moreover, castration in a patient this age has the disadvantage of producing a severe menopause unnecessarily if the patient remains well. This patient should be irradiated over the internal mammary, supraclavicular, and axillary fields on the side which was operated on, and nothing further should be done now except for follow-up examinations.

STIMULATION OF INTESTINAL MOTILITY

To the Editor:—*Artificial stimulation of intestinal motility, as with neostigmine, has always been frowned upon by surgeons for postoperative use as being unphysiological. Recently a new product, pantothenyl alcohol, an alcohol of pantothenic acid, has been recommended for postoperative use to prevent distention after surgery. Would the use of this product be physiological in a case of gynecologic surgery where the intestine was only handled gently but not actually incised? Would its use be physiological in a case of intestinal surgery where the intestine was actually incised and sutured?*

James W. Davis, M.D., Leonard, Texas.

Answer.—The name pantothenic (acid) denotes the ubiquitous distribution of this material in foodstuffs. It is easily synthesized in significant quantities by bacteria found normally in the gastrointestinal tract, and it is a constituent of most cells in the body. Pharmacologically, pantothenic acid is involved in the coenzyme A system. A specific deficiency of pantothenic acid has been described in many laboratory animals; it has been produced in man by Bean and associates (*J. Clin. Invest.* **34**:1085, 1955). Symptoms under these conditions varied but consisted chiefly of adrenal insufficiency; these occurred only after administration of a diet free of pantothenic acid and a potent antagonist to this vitamin. The gastrointestinal observations were confined to a depression of gastric secretion; there was no alteration in gastric motility. In studies by Gershberg and associates (*J. Nutrition* **39**:107, 1949) on patients with a wide variety of deficiency and metabolic diseases, tolerance-excretion tests with pantothenic acid and alcohol of pantothenic acid administered intravenously failed to demonstrate a specific pantothenic acid deficiency, except in relation to pernicious anemia. Because of such observations and the wide distribution of pantothenic acid in the body and in food, the clinical existence of a deficiency of this substance would appear to be most unusual, even under preoperative and postoperative conditions. Thus, the rationale for the use of pantothenic acid would be determined more by its pharmacological action than by a presumed deficiency state.

Sclausero (*Gazz. med. ital.* **114**:291, 1955; abstracted, *J. A. M. A.* **161**:106 [May 5] 1956), Jacques (*Lancet* **2**:861, 1951), and others have published favorable results concerning the use of pantothenic acid or pantothenol (alcohol of pantothenic acid) in the management of "intestinal paresis"; i. e., paralytic ileus in patients who had undergone abdominal or pelvic surgical procedures. Closer examination, however, suggests that time and coincidence, as well as the intravenously administered fluids, might have been equally important factors in the clinical response. Jacques's report, although based on only 16 patients with paralytic ileus, indicated that usually only one injection of pantothenic acid resulted in relief of the ileus. Other drugs, such as neostigmine and acetylcholine, previously had been ineffective, whereas pantothenic acid administered intravenously initiated prompt return of normal intestinal motility. Despite these reports the evidence is not yet entirely convincing. Further study of the usefulness of pantothenic acid in the management of postoperative distention seems desirable. Until favorable observations are reported by American surgeons, the use of pantothenyl alcohol postoperatively cannot be evaluated completely.

There would appear to be no physiological need for pantothenic acid in "a case of gynecologic surgery where the intestine was only handled gently but not actually incised." The early use of compounds with

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any medical or other organization unless specifically so stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

potential stimulating action upon the intestines after intestinal surgery would be regarded as unphysiological, since stimulation of the intestines at this stage is undesirable. The efficacy of drugs, such as neostigmine or acetylcholine, in postoperative paralytic ileus is highly questionable.

PREGNANCY AND HEREDITARY DISEASE

To the Editor:—*A 26-year-old woman, who has had three pregnancies in the past five years, had her first child succumb to lipid histiocytosis of phosphatide type (Niemann-Pick disease). Her second child was normal except for a minor congenital defect of the hand in the thumb. The third child, 8 months of age at time of writing, has stigmata consistent with Niemann-Pick disease, including an enlarged spleen and positive findings in the bone marrow. Is further pregnancy indicated?*

Robert E. Sandlin, M.D., Antioch, Calif.

Answer.—Niemann-Pick disease is a rare hereditary disease characterized by the accumulation of phosphatides in the reticuloendothelial system. Characteristic lipid-containing cells, known as Pick foam cells, may be found in all tissues. The condition is generally considered to be due to the action of a recessive gene.

If this is correct, both the father and the mother in question would be heterozygous or carriers of this gene. Each child that they have would have one chance in four of being affected and one chance in two of being heterozygous as its parents are. The fact that two affected children have already been produced would not lessen the chances of another child having the trait . Because the disease is fatal in affected children, the advisability of another pregnancy is very doubtful. The manner of preventing this, however, can best be determined by the parents in consultation with their physician. Irregular dominance has also been suggested as a mode of inheritance. If this is true in this instance, the chances of another affected child would not be lessened.

TEMPERATURE OF OPERATING ROOMS

To the Editor:—*What is the optimal temperature for an operating room? The particular operating room in question is located in the country and does not have air conditioning. Could not the windows to the outside air be opened during the summer months?*

M.D., New York.

Answer.—Common practice is to maintain operating rooms at a temperature of about 80 F (dry bulb). Humidity is important, and Clark, Orkin, and Rovenstine conclude that a better method is to use a wet-bulb thermometer and maintain the temperature at 75 F (wet bulb).

If an appropriate combination of temperature and humidity can be maintained, there is no objection to having the windows to the outside air open during the summer months, provided that two precautions are observed. First, the windows must be completely and effectively screened against all insects in the area. In some areas it would be sufficient to screen against flies and mosquitoes, but in other areas various smaller insects, such as midges, would have to be excluded, requiring very fine mesh material. Second, the patient should be protected against drafts, which would make it inadvisable to have the window open if there were enough wind to produce rapid air currents, even though the outside temperature approximated the ideal.

FAILURE OF EYELIDS TO CLOSE DURING SLEEP

To the Editor:—*The eyelids of a 4½-year-old boy do not always close completely when he sleeps, leaving part of the eyeball exposed. Both eyes are usually involved. When the eyes are manually closed during sleep, the lids sometimes open again. In the waking state there are no difficulties with voluntary closure. The latter can be maintained against pressure, and the tonus of the levators is good. There is no eye pathology and no exophthalmos, and the lids are well formed. Neurologically, the child is entirely normal. His sleep is not interfered with by this defect, even when there is light. The mother is chiefly worried about possible trauma to the eyes during sleep (from foreign bodies, insects, etc.). Can the condition be disregarded?* *M.D., New York.*

Answer.—The failure of the eyelids to close during sleep has been reported a number of times in the literature and is usually unassociated with pathology. In the case cited, it would be interesting to note whether the eyes roll up sufficiently during sleep so that the corneas are completely covered by the partly closed lids. It would be the feeling of this consultant that, if the corneas are completely covered, no eventual trouble will arise from this situation. On the other hand, if the corneas are not covered, they may well dry out, erode, and ulcerate. In such a case, some bland ointment or artificial tears (methylcellulose) should be used each night on going to bed.

EXPOSURE OF EYES TO SOLDERING FUMES

To the Editor:—*A patient has been employed steadily for about 15 years as a tinsmith, and his job has been to solder and braze sheet metal and copper. What are the effects of muriatic acid and soldering fumes on the cornea?*

M. L. Riccitelli, M.D., New Haven, Conn.

Answer.—The usual exposure of a tinsmith to soldering or brazing fumes should not involve any injury to the cornea. The fume composition would depend upon the flux used and the metal surface involved. When the soldering flux is muriatic acid or muriatic acid "cut" with zinc to form zinc chloride, the fume would contain, in addition to water vapor, a very small amount of hydrochloric acid and of zinc or copper, as the case

V 16
1957

may be, in the form of oxide. When as in brazing the flux is generally borax, this would be present in the fume. In neither instance would the concentration be such as to injure the cornea. Should the acid flux be spattered directly in the eye, an acid burn of the cornea would result, the severity depending upon the amount of acid involved and the duration of the contact. Years of observation of a large number of solderers have not disclosed any injuries to the cornea from fume exposure.

FIVE-YEAR MEDIAN

To the Editor:—*What is meant by the five-year median? Why is this statistic, which is used so much in comparing communicable disease reports, more advantageous than comparing reports year by year?*

M.D., Illinois.

Answer.—A five-year median is another expression of an average. It is the middle one of an array of five figures, usually those for five consecutive years. When a five-year median is used, there are always two figures less and two greater than the middle or median figure. Because many infectious diseases fluctuate widely in incidence from one year to another, it is considered desirable to compare a current figure with one that is less influenced by fluctuations. For this reason, median averages are preferred to the common or mean averages, the latter being subject to the influence of extreme variations which would result if just one year, of the five being reported, had an unusually high or low incidence. While it would not be misleading to compare a current figure with each of the previous five years, it usually is not done in current publications because of limitations of space. Furthermore, by using a median more valid comparison can usually be made.

CATARACT SURGERY IN A DIABETIC

To the Editor:—*Inasmuch as postoperative intraocular bleeding is commoner in recently controlled diabetics, when cataract surgery is required upon an uncontrolled diabetic, is it preferable to go directly ahead with the surgery and disregard the diabetic status until the postsurgical period?*

Herbert J. Rosen, M.D., Dover, N. J.

Answer.—It is good practice to stabilize the blood glucose in a diabetic who is to undergo cataract surgery. Since this operation is nearly always elective, sufficient time for this purpose is usually available. A sense of well-being in the patient is a valuable adjunct in ocular surgery. If circumstances are such that previous regulation is impossible and cataract extraction is necessary, it is better to operate with the blood glucose level a little elevated than to attempt to lower it suddenly. The latter procedure, especially if it produces a mild insulin shock, is likely to make an elderly patient restless, uncomfortable, and perhaps uncooperative. This, of course, increases the likelihood of hemorrhage or other surgical complication.

ETHER AND ALOPECIA

To the Editor:—*In the practice of anesthesiology one is frequently confronted with the statement that "ether makes the hair fall out." Is there any literature giving a scientific opinion on the subject?*

George T. Henderson, M.D., Bound Brook, N.J.

Answer.—None of the reference books on toxicology to which this consultant has access give ethyl ether as a cause of alopecia. Ether is said to be inert to metabolic processes and is largely eliminated in the expired air. In industry, 500 ppm of ethyl ether is the allowable maximum concentration which is said not to cause dizziness or injurious effects. Von Oettingen in his book "Poisoning" (New York, Harper & Brothers, 1952) gives a long list of symptoms from which workers industrially exposed to ether may suffer, but loss of hair is not among them. Patients undergoing surgical procedures that require ether anesthesia may be in poor health and debilitated, and this may cause "the hair to fall out." The patient or the relatives may attribute to the ether the loss of hair which is actually due to poor health.

EFFECT OF CITRATE AND POTASSIUM ON BLOOD

To the Editor:—*A patient is to receive an intravenously administered injection of 40,000,000 units of potassium penicillin G daily for three to six weeks. If the penicillin is buffered with sodium citrate, would there be enough citrate to affect blood coagulation? Would there be enough potassium in potassium penicillin G to affect the blood potassium?*

M.D., West Virginia.

Answer.—Assuming that the penicillin is administered by slow intravenous drip and that renal function is adequate, the blood potassium should not be raised to dangerously high levels by the administration of 40,000,000 units of potassium penicillin G daily. Further, since citrate is metabolized very rapidly by the liver, citrate intoxication does not occur unless the hepatic function is seriously impaired. In such an event the toxic effects are those of hypocalcemia. Prolonged blood coagulation does not occur in vivo, since it develops only when the blood calcium is reduced to 2.5 mg. per 100 cc. or less, a level incompatible with life.

AMYOTROPHIC LATERAL SCLEROSIS

To the Editor:—*Please supply information regarding a toxoid treatment for amyotrophic lateral sclerosis.*

Joseph M. Silver, M.D., Fitchburg, Mass.

Answer.—This consultant has no information regarding a toxoid treatment for amyotrophic lateral sclerosis. At the present time, the etiology of this disease has not been ascertained, and there is no known specific treatment for it.

SEVERED RECURRENT LARYNGEAL NERVE

To the Editor:—*What is the best surgical technique of uniting the cut ends of a severed recurrent laryngeal nerve?*

M.D., New York.

Answer.—A severed recurrent laryngeal nerve can be united, as any other small nerve, by meticulous approximation of its ends with extremely fine silk sutures, such as are used in eye surgery. Unfortunately, however, this consultant knows of no report of a severed nerve which has recovered its function after anastomosis. Anastomosis of the nerves was once advocated by Dr. Lahey, but no reports of successful return of function were made in the case of patients who had had the nerve actually severed. The chief advantage of exploration of the recurrent nerve after its paralysis has been observed is to remove any ligatures which might have inadvertently been placed on the nerve. If such a ligature is removed promptly, the nerve will recover its function.

VAGINAL CHILDBIRTH AFTER CESAREAN SECTION

To the Editor:—*A 30-year-old woman has presented herself for prenatal care. She has had four pregnancies, three with delivery by the vaginal route, but the second pregnancy was complicated by third trimester bleeding, and a cesarean section was done, with delivery of a living 4-lb. baby. Can it be assumed that the cesarean scar has healed so well as to be no factor in the approaching delivery, or have the last two deliveries through the birth canal tested the scar to the limit? Are there any statistics on uterine-scar ruptures after several uneventful deliveries from below?*

Lester Lando, M.D., Monsey, N. Y.

Answer.—The delivery of babies through the birth canal after previous cesarean section is no valid test of a uterine scar. Serious and fatal uterine ruptures have occurred after such deliveries in women who had been subjected to previous cesarean sections. If it is decided that this patient is to be delivered from below, she should be cautioned to come into the hospital at the first sign of impending labor. The labor should be carefully supervised, so that any unusual tenderness of the uterus can be ascertained early and properly evaluated. The child should be delivered by outlet forceps when dilatation is complete and the head has reached the pelvic floor.

Eastman reports that on his service the incidence of uterine rupture after previous cesarean section is 2.1%—1% in pregnancy and 1.1% in labor. The maternal mortality after uterine rupture is at least 10%. Thus, the mortality from uterine rupture in women who have had previous abdominal deliveries is about 0.2%, about twice the average risk of cesarean section today. Although this increased hazard is not great, uterine rupture entails an inordinately high infant loss and the probable termination of future childbearing. Thus, the indication for the initial abdominal delivery must be given the greatest consideration, for the uterine scar may well make future childbearing an abnormal function.

RECTAL INCONTINENCE

To the Editor:—*Is any kind of pouch or bag made which would be helpful when there is complete loss of sphincter control in the rectum?*

George B. Lawson, M.D., Roanoke, Va.

Answer.—There is no effective bag or appliance for the control of fecal material in rectal incontinence. The only effective solution is a successful repair of the defect.

INGESTION OF FOREIGN BODIES

To the Editor:—*In answer to a query about the ingestion of foreign bodies (*The Journal, *July 20, 1957, page 1422), the consultant says: "Sharply pointed radiopaque foreign bodies that do not leave the stomach or pass through the duodenum occasionally require removal by transgastric means."*

What of the magnetic removal of such objects (Equen and others: Nail in Duodenum Removed by Magnet, J. A. M. A. **135**:*432 [Oct. 18] 1947; Equen: Magnetic Removal of Foreign Bodies, Springfield, Ill., Charles C Thomas, Publisher, 1957)? In the latter publication the author summarized more than 200 cases of removal of ferrous bodies from the upper gastrointestinal tract with the magnet without a single fatality. When the patient is an infant or small child, removal of such bodies by transgastric or transduodenal means is both difficult and dangerous, involving perhaps a week of hospitalization and intravenously given fluids. Just giving fluids into the small veins of such a patient is no light undertaking.*

L. Minor Blackford, M.D.
104 Ponce De Leon Ave. N. E.
Atlanta 8, Ga.

The above comment was referred to the consultant who answered the original query, and his reply follows.—Ed.

To the Editor:—*The removal of ferrous foreign bodies from the upper part of the gastrointestinal tract by magnet has been proved feasible and satisfactory by Dr. Equen, who probably has had the largest experience of anyone with this method. It is difficult to assess the relative hazards of the use of the magnet and of surgical procedures. However, little additional hazard or difficulty should be encountered in the few instances in which intravenous administration of fluids is indicated (Miles and Harris: Venostomy, an Improved "Cut-Down" Procedure in Infants and Children,* J. A. M. A. **161**:*619-621 [June 16] 1956).*

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